



CITY OF MANCHESTER.

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# REPORT

ON THE

Health of the City of Manchester,

1907.

BY


JAMES NIVEN, M.A., M.B.

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MANCHESTER:

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PUBLIC HEALTH OFFICE,  
TOWN HALL, MANCHESTER,

JULY, 1908.

MY LORD MAYOR, ALDERMEN, AND MEMBERS  
OF THE COUNCIL.

I have the honour to submit to you my Annual Report on the Health of Manchester for 1907.

The death-rate for 1907 was 17·9 per 1,000, which is practically the same as the death-rate for 1905, and lower than in other former years. The cool summer reduced the death-rate from Diarrhœa, although the prevalence of Influenza towards the end of the year balanced this advantage. The reduction of the death-rate in recent years is matter for congratulation, since it almost certainly implies the increased efficiency and happiness of the population. The improvement is not confined to any section of the population, and is quite as marked in the poorest part of the City as it is in other districts.

The infantile death-rate was the lowest yet reached, chiefly in consequence of the cool summer, and at the younger periods of life generally the year showed advance on previous years. On the other hand, there was some retrogression at more advanced periods of life.

The birth-rate was the lowest yet attained, except that for the year 1901, in which the effects of arsenical poisoning were manifested.

The proportion of deaths occurring in public hospitals maintained by charity continues to increase.

No special statement in reference to infantile mortality has been made, as a report on this subject was presented to the City Council in 1907. In the same year, the Council were recommended by the Sanitary Committee to adopt the Notification of Births Act, but declined to do so.

A Special Sub-Committee, however, of the Sanitary Committee has been appointed to deal with the subject of infantile mortality, and it may be anticipated that useful measures will be gradually evolved as a result of its deliberations.

The section of the report dealing with Scarlet Fever sums up the position so far as the occurrence of return cases is concerned. The prevention of such cases must always be a matter of grave concern to the Public Health Authority and to the Medical Superintendent of the Fever Hospital.

The section dealing with Diphtheria is largely concerned with the mode of occurrence of this disease in schools. It is shown that school outbreaks are probably due to overlooked persistent cases, and that the influence of school life is clearly marked. Special measures are required in dealing with these occurrences.

Measles cannot be more effectually dealt with without increased powers and increased staff. Enteric Fever is fully discussed, and an effort is made to explain the annual course of the disease. There is, however, in all probability, some source of the disease in autumn as yet undiscovered. Recent work has caused special stress to be laid on the persistence of infection over long periods in particular individuals. The analogy of these cases to those causing return cases in Scarlet Fever, and to those causing up-rushes of Diphtheria, is evident, but is not to be pressed too far.

In a consideration of the subject of Phthisis, it is shown that the problem of the nutrition of the families of consumptive persons is a pressing one.

The report of Mr. Brittlebank on the work of the year in connection with the Manchester Milk Clauses deserves careful attention. The measure of success achieved, though considerable, does not prevent a recognition of the need for further advance.

Alike in Enteric Fever and in Tuberculosis, there is shown to be a steady reduction of mortality.

The report of Dr. Margaret Merry Smith on the work of the Midwives Supervising Committee is a statement of successful and useful work, but also indicates the directions in which this work may be extended.

The work of the Housing Sub-Committee continues to be arduous and most useful, and the Sub-Committee pursues its task in a practical and resolute spirit. As a result of this work, and of the excellent work being done in the conversion of closets and the reconstruction of house drains, the health and comfort of the citizens are being steadily furthered. Some considerations are advanced on the subject of housing.

The report by Dr. A. K. Gordon on Monsall Hospital for 1907 is especially notable for the surgical procedures which he has carried on in connection with Puerperal Fever, of which he gives a full account. It is a record of excellent work.

In like manner, Dr. Rhodes' report for the Baguley Sanatorium shows good administration. His record is remarkable in respect of the low mortality attained, and of his success in the prevention of return cases.



It may be permitted here to refer to the admirable report of Dr. B. K. Goldsmith, now Assistant Medical Officer of Health in Bombay, on a statistical inquiry into the effect of school life on the occurrence of Scarlet Fever.

The Health Visitors of the Ladies' Public Health Society have been taken over by the Sanitary Committee, and are under the able supervision of Miss Eleanor Greg. Their work has been systematised, and it is hoped that the staff will gradually be reconstituted.

Public Health work, however, is gradually taking on new forms. The prevention of infantile mortality is assuming larger dimensions. The protection of food stuffs is receiving increased attention. The re-housing of the poorer classes is regarded more and more as a pressing problem.

No doubt, much may be done by organisation and by the use of existing means. But, to deal effectually with these questions, increase of my staff will be necessary. In any case, more attention must be given to the questions pressing to the front. The medical and other inspection of school children is another question which should engross a large amount of attention, and which requires to be attacked with energy.

Other subjects more detached from the routine work of the Medical Officer of Health will be found reported upon by the Sanitary Superintendent in the annual statement of the Sanitary Committee, by the Superintendent of the Cleansing Department, and by the Veterinary Inspector to the Markets Committee.

I would acknowledge my debt to all the responsible members of my staff for ungrudging assistance in the work of the department.

I have the honour to be, my Lord Mayor,

Your obedient servant,

JAMES NIVEN,

*Medical Officer of Health.*



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# ANNUAL REPORT.

## STATISTICAL.

The following are general statistics for the year 1907 :—

Area of the City in acres .....	19,059							
Estimated population at the middle of 1907 .....	<table><tr><td>{ Males .....</td><td>308,428</td><td rowspan="2">}</td><td rowspan="2">....</td><td rowspan="2">643,158</td></tr><tr><td>{ Females .....</td><td>334,730</td></tr></table>	{ Males .....	308,428	}	....	643,158	{ Females .....	334,730
{ Males .....	308,428	}	....				643,158	
{ Females .....	334,730							
No. of persons per acre .....	33							
No. of inhabited houses at the Census taking, 1901 .....	121,688							
No. of uninhabited houses at the Census taking, 1901 .....	9,525							
Total No. of tenements .....	125,875							
No. of tenements at the Census taking, 1901, 4 rooms and under..	62,749							
Average No. of persons at the Census taking, 1901, in houses of 4 rooms and under .....	4.27							
Persons married per 1000 of population in the Manchester, Chorlton, and Prestwich Unions .....	18.31							
Births in the City of Manchester .....	<table><tr><td>{ Males .....</td><td>9,352</td><td rowspan="2">}</td><td rowspan="2">....</td><td rowspan="2">18,251</td></tr><tr><td>{ Females .....</td><td>8,899</td></tr></table>	{ Males .....	9,352	}	....	18,251	{ Females .....	8,899
{ Males .....	9,352	}	....				18,251	
{ Females .....	8,899							
Annual birth-rate per 1000 of population .....	28.38							
Deaths ..	<table><tr><td>{ Males .....</td><td>6,020</td><td rowspan="2">}</td><td rowspan="2">....</td><td rowspan="2">11,508</td></tr><tr><td>{ Females .....</td><td>5,488</td></tr></table>	{ Males .....	6,020	}	....	11,508	{ Females .....	5,488
{ Males .....	6,020	}	....				11,508	
{ Females .....	5,488							
Annual death-rate per 1000 of population .....	<table><tr><td>{ Males ....</td><td>19.52</td><td rowspan="2">}</td><td rowspan="2">persons ....</td><td rowspan="2">17.89</td></tr><tr><td>{ Females ..</td><td>16.40</td></tr></table>	{ Males ....	19.52	}	persons ....	17.89	{ Females ..	16.40
{ Males ....	19.52	}	persons ....				17.89	
{ Females ..	16.40							
Deaths under 1 year of age per 1000 births.....	147.4							
Excess of registered births over deaths .....	6,743							
Estimated increase of population during the year .....	5,638							
Annual birth-rate exclusive of Moss Side and Withington .....	29.36							
„ death-rate „ „ „ „ .....	18.74							
Infantile „ „ „ „ .....	152.5							
Percentage mortality occurring in public institutions .....	26.4							
The mean death-rate in 1891-1900 was .....	23.27							
„ birth-rate „ „ „ „ .....	33.09							

*Low Birth-rate and Low Death-rate.*

The vital statistics for the year 1907 show that the advance made in Manchester is being maintained, so far as mortality is concerned, the death-rate being 18·74, or, with the addition of Withington and Moss Side, 17·89, per 1000. The death-rate for the City as formerly constituted is thus the same as in 1905, and is considerably lower than in other previous years. (See Table E Appendix.) No recent estimate has been made of the population which may serve to control the Registrar General's figure, and it is possible that the marked lowering of the death-rate which has occurred in recent years is due to over-estimate of the population. I am disposed to think that the estimate is not far from the true population, but this is only impression. There is, again, a lowering of the birth-rate corresponding to the fall which has taken place throughout the country generally. It is not so great as to suggest that there is serious miscalculation of the population.

There can, unfortunately, be little doubt that the continued descent of the birth-rate is due not merely to the prevention of conception, but also in no small measure to destruction of its fruits. If so, the effect both on natural selection and on the national habits must be injurious. The offspring must also be injured in many cases by the efforts made to bring on premature labour.

COMPARISON OF THE DEATH-RATE FROM ALL CAUSES WITH THAT RECORDED  
IN OTHER TOWNS.

A comparison of the death-rate in Manchester and in other towns is given in the Annual Summary of the Registrar General, both before and after correction for differences in sex and age distribution. Great as the improvement in the Manchester death-rate has been, there is but little relative improvement. The death-rates in 1907 are low, chiefly owing to the cool summer.

The details are shown in Table 1, which gives the crude and corrected death-rates for 76 great towns.

Table 1, extracted from the Annual Report of the Registrar-General, shows the relative position of Manchester amongst the large towns. It will be seen that, though the improvement in the death-rate continues, the position of the City is still eighth from the bottom, although there has been a gain of four points on the year.

TABLE 1.—RECORDED AND CORRECTED DEATH-RATES PER 1,000 PERSONS  
LIVING IN 76 GREAT TOWNS IN 1907.

TOWNS, in the order of their Corrected Death-rates	Standard Death- rate *	Factor for Correction for Sex and Age Dis- tribution †	Recorded Death- rate, 1907	Corrected Death- rate, 1907 ‡	Comparative Mortality Figure, 1907 §
Cols.	1	2	3	4	5
England and Wales .....	18·194	1·0000	15·00	15·00	1,000
England and Wales, less the 76 Towns.....	18·85	0·9652	14·68	14·17	945
76 Towns .....	17·13	1·0621	15·38	16·34	1,089
Hornsey.....	15·96	1·1400	8·61	9·82	655
King's Norton .....	17·40	1·0456	10·24	10·71	714
Handsworth (Staffs.).....	16·53	1·1007	10·46	11·51	767
Leyton .....	17·69	1·0285	11·22	11·54	769
East Ham .....	17·06	1·0665	11·18	11·92	795
Hastings .....	18·92	0·9616	12·75	12·26	817
Willesden .....	16·96	1·0728	11·53	12·37	825
Walthamstow.....	17·21	1·0572	11·99	12·68	845
Bournemouth .....	17·22	1·0566	12·00	12·68	845
Croydon.....	17·75	1·0250	12·40	12·71	847
Northampton.....	17·50	1·0397	12·33	12·82	855
Reading .....	17·59	1·0343	12·41	12·84	856
Southampton... .	18·30	0·9942	13·03	12·95	863
Burton-on-Trent .....	16·93	1·0747	12·48	13·41	894
Leicester .....	17·05	1·0671	12·67	13·52	901
Bristol .....	17·71	1·0273	13·17	13·53	902
Great Yarmouth .....	19·88	0·9152	14·90	13·64	909
Devonport.....	17·35	1·0486	13·17	13·81	921
Norwich.....	19·05	0·9551	14·60	13·94	929
Smethwick.....	16·63	1·0940	12·96	14·18	945
Plymouth .....	18·66	0·9750	14·70	14·33	955
Aston Manor.....	16·41	1·1087	12·95	14·36	957
Tottenham.....	16·86	1·0791	13·43	14·49	966
Brighton.....	18·46	0·9856	14·73	14·52	968
Ipswich .....	18·63	0·9766	14·95	14·60	973
Wallasey .....	16·63	1·0940	13·36	14·62	975
Coventry .....	18·15	1·0024	14·80	14·84	989
West Hartlepool .....	16·57	1·0980	13·54	14·87	991
London .....	17·31	1·0511	14·60	15·35	1,023
Derby.....	16·88	1·0778	14·33	15·44	1,029
Barrow-in-Furness.....	16·01	1·1364	13·67	15·53	1,035
Halifax .....	16·79	1·0836	14·33	15·53	1,035
York .....	17·67	1·0297	15·09	15·54	1,036
West Ham .....	17·01	1·0696	14·63	15·65	1,043
Wolverhampton.....	17·59	1·0343	15·15	15·67	1,045
Gateshead .....	17·26	1·0541	15·43	16·26	1,084
Bradford .....	16·46	1·1053	14·75	16·30	1,087
Cardiff .....	16·73	1·0875	14·99	16·30	1,087
Walsall .....	17·18	1·0590	15·47	16·38	1,092

For Notes \* † ‡ § see page 4.



TABLE I (continued).—RECORDED AND CORRECTED DEATH-RATES PER 1,000 PERSONS LIVING IN 76 GREAT TOWNS IN 1907—*continued*.

TOWNS, in the order of their Corrected Death-rates	Standard Death- rate*	Factor for Correction for Sex and Age Dis- tribution †	Recorded Death- rate, 1907	Corrected Death- rate, 1907‡	Comparative Mortality Figure, 1907 §
Cols.	1	2	3	4	5
Birkenhead .....	17·07	1·0658	15·37	16·38	1,092
Portsmouth .....	17·72	1·0267	16·04	16·47	1,098
Hull .....	17·75	1·0250	16·12	16·52	1,101
Rotherham .....	17·59	1·0343	16·10	16·65	1,110
Newport, (Mon.) .....	16·84	1·0804	15·43	16·67	1,111
Leeds .....	16·68	1·0908	15·29	16·68	1,112
West Bromwich .....	18·04	1·0085	16·65	16·79	1,119
Newcastle-on-Tyne .....	16·89	1·0772	15·92	17·15	1,143
Grimsby .....	16·99	1·0709	16·17	17·32	1,155
Warrington .....	16·89	1·0772	16·08	17·32	1,155
Birmingham .....	16·91	1·0759	16·18	17·41	1,161
South Shields .....	17·19	1·0584	16·71	17·69	1,179
Bury .....	16·25	1·1196	15·97	17·88	1,192
Rhondda .....	16·54	1·1000	16·28	17·91	1,194
Tynemouth .....	17·62	1·0326	17·36	17·93	1,195
Huddersfield .....	16·96	1·0728	16·94	18·17	1,211
Sheffield .....	16·88	1·0778	17·06	18·39	1,226
Nottingham .....	17·27	1·0535	17·51	18·45	1,230
Bootle .....	16·52	1·1013	16·78	18·48	1,232
Stockton-on-Tees .....	17·35	1·0486	18·06	18·94	1,263
Rochdale .....	16·45	1·1060	17·15	18·97	1,265
Bolton .....	16·09	1·1308	16·79	18·99	1,266
Blackburn .....	16·09	1·1308	16·92	19·13	1,275
Stockport .....	16·84	1·0804	17·73	19·16	1,277
Swansea .....	16·96	1·0728	17·90	19·20	1,280
Salford .....	16·47	1·1047	17·69	19·54	1,303
Sunderland .....	17·64	1·0314	19·17	19·77	1,318
Burnley .....	16·14	1·1273	17·59	19·83	1,322
St. Helens .....	16·79	1·0836	18·48	20·02	1,335
Manchester .....	16·32	1·1148	18·07	20·14	1,343
Liverpool .....	17·00	1·0702	19·00	20·33	1,355
Hanley .....	16·65	1·0927	18·63	20·36	1,357
Wigan .....	16·58	1·0973	18·66	20·48	1,365
Merthyr Tydfil .....	17·16	1·0603	19·54	20·72	1,381
Preston .....	16·63	1·0940	19·06	20·85	1,390
Oldham .....	16·18	1·1245	19·35	21·76	1,451
Middlesbrough .....	16·71	1·0888	20·27	22·07	1,471

\* The Standard Death-rate signifies the rate at all ages calculated on the hypothesis that the rates for each sex at each of twelve age-periods in each town were the same as in England and Wales during the ten years 1891-1900, the rate at all ages in England and Wales during that period having been 18·21 per 1,000.

† The Factor or Correction is obtained by dividing the Standard Death-rate in England and Wales by the Standard Death-rate in each town, and is the figure by which the Recorded Death-rate should be multiplied in order to correct for variations of sex and age distribution.

‡ The Corrected Death-rate is the Recorded Death-rate multiplied by the Factor for Correction.

§ The Comparative Mortality Figure represents the Corrected Death-rate in each town compared with the Recorded Death-rate at all ages in England and Wales in 1902, taken as 1,000.



## FACTORS AFFECTING THE VITAL STATISTICS.

*Prices of Staple Articles of Food, and of Coal.*

From Table 2 it will be seen that, while there was some reduction in the prices of flour, beef, and mutton, the price of house coal went up beyond that holding in any previous year since 1891. There was, however, less pauperism in 1907 than in the previous three years:—

TABLE 2.—TOWNSHIP OF MANCHESTER.—PRICES PAID BY THE GUARDIANS FOR FLOUR, BUTCHERS' MEAT, AND COAL, ALSO THE AVERAGE WEEKLY NUMBER OF PERSONS IN RECEIPT OF RELIEF, DURING THE YEARS 1887-1907.

YEAR ENDING	PRICES OF PROVISIONS						PAUPERISM		BIRTH- RATE PER 1,000
	Flour per Sack of 280lbs.	Butchers' Meat, per lb.			Coal, per ton		Average number of Paupers relieved in each week		
		Beef		Mutton	Engine	House	Indoor	Outdoor	
		Coarse	Fine						
1887	25/2 to 30/6	-/3 $\frac{3}{4}$	-/6 $\frac{1}{2}$	-/6 $\frac{1}{2}$	5/6	8/4	3123	877	33·9
1888	24/- to 29/3	-/3 $\frac{3}{4}$	-/6 $\frac{1}{2}$	-/6 $\frac{1}{2}$	5/5	8/3	3130	713	33·3
1889	24/11 to 31/2	-/4 $\frac{1}{2}$	-/6 $\frac{1}{2}$	-/6 $\frac{1}{2}$	5/8	8/7	3037	632	33·1
1890	24/9 to 29/11	-/5	-/7	-/7	7/-	9/9	2998	498	31·8
1891	27/3 to 28/11	-/4 $\frac{1}{4}$	-/6 $\frac{1}{2}$	-/6 $\frac{1}{2}$	8/8	11/2	3118	466	33·8
1892	26/4 to 28/5	-/4	-/6 $\frac{1}{4}$	-/6 $\frac{1}{4}$	7/6	10/2	3251	551	33·4
1893	21/8 to 25/1	-/3 $\frac{7}{8}$	-/6 $\frac{1}{4}$	-/6 $\frac{1}{4}$	6/5	10/0	3277	586	33·4
1894	17/2 to 23/9	-/3 $\frac{3}{4}$	-/6	-/6	7/1	10/10	3328	395	31·8
1895	15/6 to 21/-	-/3 $\frac{3}{4}$	-/6	-/6	5/6	10/3	3343	618	33·4
1896	16/6 to 24/-	-/3 $\frac{5}{8}$	-/5 $\frac{3}{4}$	-/5 $\frac{3}{4}$	5/7	9/1	3348	533	32·8
1897	17/3 to 33/9	-/3 $\frac{1}{2}$	-/5 $\frac{5}{8}$	-/5 $\frac{5}{8}$	5/9	8/8	3476	697	32·9
1898	26/7 to 33/8	-/3 $\frac{1}{2}$	-/5 $\frac{1}{2}$	-/5 $\frac{1}{2}$	6/2	8/4 $\frac{1}{2}$	3519	732	32·3
1899	20/11 to 23/-	-/3 $\frac{1}{2}$	-/5 $\frac{5}{8}$	-/5 $\frac{5}{8}$	7/5	9/11	3232	597	32·2
1900	20/9 to 22/9	-/3 $\frac{1}{2}$	-/5 $\frac{1}{2}$	-/5 $\frac{5}{8}$	11/9 $\frac{3}{4}$	14/2 $\frac{1}{2}$	3189	686	32·4
1901	21/4 to 23/3	-/3 $\frac{5}{8}$	-/5 $\frac{5}{8}$	-/5 $\frac{5}{8}$	11/8	15/2	3403	817	28·7
1902	20/11 to 24/3	-/3 $\frac{7}{8}$	-/5 $\frac{3}{4}$	-/5 $\frac{3}{4}$	9/3	13/5 $\frac{1}{2}$	3492	752	33·0
1903	21/10 $\frac{1}{2}$ to 23/3	-/4 $\frac{3}{8}$	-/6	-/5 $\frac{1}{2}$	9/-	12/11 $\frac{1}{4}$	3521	812	31·7
1904	23/- to 28/6	-/4 $\frac{3}{8}$	-/6	-/6	8/2	11/11	3486	1459	31·1
1905	23/- to 23/9	-/4 $\frac{3}{8}$	-/6	-/6	7/6	10/9	3489	1588	29·0
1906	20/6 to 26/-	-/4 $\frac{1}{4}$	-/6	-/6	8/6	11/9	3359	1257	28·9
1907	20/3 to 25/6	-/4	-/6	-/5 $\frac{1}{4}$	11/2	14/5	3354	909	28·4

The proportion of deaths occurring in public institutions did not diminish, however. These formed 26·5 per cent. of the total number. This is the highest proportion yet attained. It seems clear that the tendency for the sick to gain admission into public institutions is increasing, a tendency which is most marked in London, and must have a material effect on the death-rate.

TABLE 3.—POPULATIONS—DEATHS OF MANCHESTER RESIDENTS,  
1907, IN PUBLIC INSTITUTIONS.

Township	NAME OF INSTITUTION	Census Population, 1901	Deaths, 1907
ANCOATS .....	{ Ancoats Hospital .....	90	197
	{ Workhouse Casual Wards (Tame Street).....	185	...
CENTRAL .....	{ Workhouse Casual Wards .....	176	2
	{ Royal Infirmary .....	274	369
	{ St. Mary's Hospital .....	59	60
	{ Lock Hospital .....	26	...
	{ Eye and Ear Hospital .....	9	3
	{ Wood Street Mission .....	18	...
	{ Chetham Hospital.....	100	...
	{ Skin Hospital.....	...	1
ST. GEORGE'S ...	Girls' Home (Charter Street) .....	36	...
CHEETHAM ...	{ His Majesty's Prison .....	1,028	10
	{ Boys' Refuge .....	220	...
	{ Northern Hospital (late Clinical) .....	50	56
	{ Jewish Hospital.....	...	10
CRUMPSALL ...	{ Manchester Workhouse .....	2,767	820
*	{ Prestwich Workhouse .....	504	211
BLACKLEY .....	{ Manchester and Salford Reformatory ... ..	91	...
	{ Litchford Hall .....	231	...
MOSTON .....	{ St. Mary's Home .....	45	2
	{ St. Joseph's Home .....	50	...
	{ St. Bridget's Orphanage .....	27	...
NEWTON.....	{ Monsall Hospital .....	428	160
	{ Little Sisters of the Poor (Culcheth Hall) ...	165	23
CLAYTON .....	Clayton Hospital .....	20	16
ARDWICK .....	{ Industrial School .....	204	...
	{ Nicholls Hospital .....	96	...
OPENSHAW .....	Crossley's "Home of Peace".....	10	11
RUSHOLME.....	{ St. Joseph's Girls' School .....	176	1
	{ St. Mary's Home .....	61	...

TABLE 3 (continued).—POPULATIONS—DEATHS OF MANCHESTER RESIDENTS,  
1907, IN PUBLIC INSTITUTIONS.

Township	NAME OF INSTITUTION	Census Population, 1901	Deaths, 1907
CHORLTON-ON-MEDLOCK	St. Joseph's Boys' School .....	418	...
	Royal Eye Hospital .....	103	...
	Little Sisters of the Poor (Plymouth Grove)...	199	22
	Southern Hospital .....	28	6
	Cancer Hospital .....	14	28
	Maternity Home .....	9	1
	Home for Young Girls.....	25	...
	Church Army Labour Home .....	20	...
	Penitentiary .....	42	...
	Chorlton Union Offices, All Saints .....	...	...
HULME .....	Cavalry Barracks .....	489	...
	Loretto Convent .....	81	...
MOSS SIDE .....	"The Home," Whalley Road .....	...	1
WITHINGTON... *	Chorlton Workhouse .....	2,013	858
<u>OUTSIDE CITY.</u>	Pendlebury Hospital .....	180	56
	Prestwich Lunatic Asylum .....	2,614	57
	Salford Royal Hospital .....	...	9
	St. Joseph's Home, Eccles .....	...	...
	Robinson Kay's House, Bury .....	...	3
	Workhouse, Salford .....	...	5
	County Asylum, Lancaster .....	...	36
	Birmingham Maternity Hospital .....	...	1
	Baguley Sanatorium.....	...	...
	Blackpool Victoria Hospital .....	...	1
	Mauldeth Hospital for Incurables .....	...	1
	Oldham Infirmary.....	...	2
	Stockport Infirmary .....	...	2
	Burton Infirmary .....	...	1
	Edinburgh Infirmary .....	...	1
	Patricroft Workhouse .....	...	4
	Ladywell Sanatorium .....	...	1
	David Lewis Epileptic Colony .....	...	3
	West Riding Asylum .....	...	1
	Cottage Hospital, Dunoon .....	...	1
	TOTAL DEATHS .....		3,053

\* Proportion only.

If we examine this table in detail, we find that an increased number of deaths occurred in 1907 in the Royal Infirmary, Ancoats Hospital, St. Mary's Hospital, the Northern Hospital, and the Cancer Hospital. The numbers in Prestwich Union Hospital and in the Chorlton Union Hospital were slightly increased, while in the Crumpsall Infirmary considerably fewer died than in 1906. In Monsall Hospital there was, also, a considerable decrease, corresponding to a diminished incidence of infectious disease.



The percentage of deaths certified by medical practitioners was 91.1, being a decrease on recent years ; by the Coroner, 8.0 per cent., being an increase on recent years ; uncertified, 0.9 per cent. It is satisfactory that the proportion of deaths entirely uncertified is so small, though it is still too large.

The principal causes of death in 1907 were as follows :—

Phthisis ... .. 1092	Premature Birth ... .. 364
Tuberculosis of Organs other than the Lungs ... .. 367	Nephritis and Bright's Disease 298
Diseases of the Heart ... 1129	Convulsions ... .. 147
Cerebral Hæmorrhage, Apo- plexy, Hemiplegia ... .. 431	Inflammation of the Brain ... 113
Pneumonia ... .. 1323	Diarrhœa and Dysentery .. 291
Bronchitis ... .. 1298	Measles ... .. 229
Digestive Organs ... .. 517	Scarlet Fever... .. 102
Atrophy, Debility (chiefly in infants) ... .. 544	Whooping Cough ... .. 314
Old Age... .. 277	Diphtheria ... .. 106
	Influenza ... .. 111
	Malignant Disease ... .. 498

751

If we compare these with the corresponding figures for 1906, we find that Phthisis is practically stationary. A reduction is shown under Heart Disease and Circulatory Diseases, although the figure is still excessive. Under the following heads there is a decrease : Atrophy and Debility, Old Age, Premature Birth, Convulsions, Inflammation of the Brain, Zymotic diseases, and Malignant Disease.

It is the first pause in the upward ascent for a number of years of the last-named cause of death.



On the other hand, Influenza deaths mount from 90 in 1906 to 111 in 1907, while deaths from Pneumonia and Bronchitis undergo a great increase. There is also an increase under Nephritis.

Diarrhoea deaths descend from 981 in 1906 to 291 in 1907.

The year's mortality account is best seen from the following table, showing the gains and losses, in deaths per 1000 from individual causes, in 1907, as compared with the average for the previous ten years :—

*Gains in 1907 per 1000 persons living, as compared with the average for the 10 years 1897-1906—(See Table K).*

Smallpox .....	0·01
Measles.....	0·31
Influenza .....	0·04
Enteric Fever .....	0·09
Diarrhoeal Diseases .....	1·00
Puerperal Fever .....	0·02
Erysipelas .....	0·02
Phthisis .....	0·17
Tuberculous Diseases (other) .....	0·19
Alcoholism.....	0·03
Cancer .....	0·01
Rheumatic Fever .....	0·02
Premature Birth .....	0·06
Nervous Diseases .....	0·18
Heart and Blood Vessel Diseases .....	0·01
Pneumonia .....	0·06
Respiratory Diseases (other) .....	0·02
Digestive System .....	0·16
	<hr/>
Total.....	2·40

*Losses in 1907.*

Whooping Cough .....	0·08
Septic Diseases .....	0·02
Bronchitis .....	0·14
Urinary Organs .....	0·06
Old Age .....	0·02
	<hr/>
Total.....	0·32

Balance of Gain from above Causes 2·08

Do. All Causes 2·45

These rates are exclusive of Moss Side and Withington.

We thus see that the great gain of the year is under Diarrhoea. Substantial gains, however, are also to be noted under Measles, Tuberculous Disease, Diseases of the Nervous and Digestive Systems, Enteric Fever, and Premature Birth.

The losses are all small, and fall chiefly under the heads of Bronchitis, Whooping Cough, and Diseases of the Urinary Systems.

The chief favourable influence in the year was the cool summer, causing a great decrease in Diarrhoea. The chief adverse influence was the advent of Influenza, which was, no doubt, responsible for much of the increase under Pneumonia and Bronchitis.

*We may now consider the relation of age and sex to the mortality, and first as to age. The following figures show the death-rates in each year since 1891 at six age groups :—*

DEATH-RATES IN AGE GROUPS, 1891-1907.

Year	All causes	Under 5 years	5-14 years	15-24 years	25-44 years	45-64 years	65 years and upwards
1891	25·97	86·6	4·80	5·65	13·93	40·4	134·2
1892	23·22	78·7	4·59	5·37	12·06	35·9	114·4
1893	24·35	86·3	4·73	4·94	12·51	35·3	121·7
1894	19·93	66·5	3·97	4·52	11·16	29·5	100·9
1895	24·68	90·7	4·67	5·19	11·92	35·9	116·0
1896	22·53	80·4	4·08	4·89	11·22	33·3	110·9
1897	22·58	85·3	3·94	4·54	10·24	32·4	109·9
1898	21·49	78·1	3·55	4·14	10·80	32·0	104·1
1899	24·22	87·5	4·22	4·86	11·80	36·4	118·6
1900	23·79	78·3	4·21	4·63	12·52	39·7	119·4
1901	21·60	74·5	4·44	4·40	10·48	34·2	106·0
1902	20·03	64·7	4·12	4·39	10·26	33·8	99·2
1903	19·45	69·5	3·71	4·05	8·99	29·7	97·5
1904	20·89	75·8	3·71	4·15	9·40	31·3	109·5
*1905	18·74	61·9	3·75	3·87	8·77	30·3	104·9
†1905	17·82	59·2	3·51	3·65	8·24	28·6	99·4
*1906	19·90	69·3	3·97	3·51	9·49	29·9	111·3
†1906	19·00	66·6	3·67	3·37	8·94	28·3	105·5
*1907	18·74	58·6	3·17	3·51	9·16	32·1	112·7
†1907	17·89	56·2	3·04	3·39	8·64	30·6	105·1

\* Exclusive of Moss Side and Withington.

† Inclusive of Moss Side and Withington.

From this table we perceive that in 1907, at ages 0 to 4 and 5 to 14, the death-rates are the lowest on record. At ages 15 to 24 the death-rate is lower than in any previous year, except in 1906, with the death-rate in which it is equal.

Above this age, however, the relation is reversed, the more so as age advances, until at ages 45 to 64 we have to go back to 1902 to find as high a death-rate.

The earlier periods of life are affected favourably by the low Zymotic mortality, the later unfavourably by Influenza and Respiratory Disease.

The numbers of deaths in the first year of life per 1000 born for a number of years are given in the following table, which shows also the mortality experienced in different parts of the first 12 months :—

*Deaths per 1000 births at the ages 0-3 months, 3-5 months, and 6-11 months, in successive years.*

YEARS	Months of Age			
	0-2	3-5	6-11	Under 1 year
1891-95 (mean) .. ..	82.79	40.99	62.97	186.75
1896 .. .. .	78.71	38.11	59.31	176.13
1897 .. .. .	82.31	42.43	69.89	194.63
1898 .. .. .	86.64	42.72	66.51	195.87
1899 .. .. .	88.14	46.49	70.79	205.42
1900 .. .. .	81.42	42.42	64.91	188.75
1901 .. .. .	88.90	42.96	66.60	198.46
1902 .. .. .	73.49	32.23	45.73	151.45
1903 .. .. .	79.91	36.37	52.25	168.53
1904 .. .. .	84.37	42.01	60.34	186.72
1905 .. .. .	78.42	34.05	46.28	158.75
1906 .. .. .	78.65	35.77	54.68	169.10
1907 .. .. .	73.91	30.46	43.07	147.44

When the facts are presented in the following manner, it will be seen that in recent years there has been a shifting of the mortality, so that it has become relatively severe in the first three months of life.

*Percentage of total infantile mortality occurring in sections of the first year of life for triennial periods from 1891 to 1906.*

YEARS	Ages			
	0-3 months	3-6 months	6-12 months	Average rate of mortality
1891-93 .. .. .	44.9	21.6	33.5	190
1894-96 .. .. .	43.8	22.2	34.0	180
1897-99 .. .. .	43.1	22.1	34.8	199
1900-02 .. .. .	45.3	21.8	32.9	178
1903-05 .. .. .	46.7	22.1	31.2	173
1906 .. .. .	50.1	20.7	29.2	153

This table shows a great reduction, mainly due to the influence of season, in the mortality occurring amongst infants in the first year of life in 1907 when compared with previous years, and also in each portion of the first year, greatest, however, in the last nine months. The shifting of the mortality towards the first three months is artificially augmented by the low Diarrhoea death-rate.

Great as is the reduction in infantile mortality in this year, it is equally manifest in the case of other towns, and it is especially conspicuous in Salford, in which town excellent work has been done to reduce the death-rate among infants.

The facts are given fully in the Registrar-General's Annual Summary.



The relation of sex to mortality is shown in *Table 4, which gives the death-rates at all ages and at 12 different age periods for each sex and for both sexes :—*

TABLE 4.—ANNUAL RATES OF MORTALITY IN MANCHESTER IN THE YEAR 1907 AT TWELVE GROUPS OF AGES AMONGST PERSONS—MALES AND FEMALES.

GROUPS OF AGES	PERSONS			MALES			FEMALES		
	Estimated Population	Deaths	Death-rates	Estimated Population	Deaths	Death-rates	Estimated Population	Deaths	Death-rates
All Ages	643,158	11,508	17.89	308,428	6,020	19.52	334,730	5,488	16.40
0—	73,298	4,120	56.21	36,512	2,274	62.28	36,786	1,846	50.18
5—	65,750	274	4.17	32,665	127	3.89	33,085	147	4.44
10—	63,358	118	1.86	31,730	58	1.83	31,628	60	1.90
15—	64,367	203	3.15	30,870	103	3.34	33,497	100	2.99
20—	68,828	248	3.60	31,816	134	4.21	37,012	114	3.08
25—	114,342	714	6.24	54,221	382	7.05	60,121	323	5.52
35—	82,278	984	11.96	39,790	541	13.60	42,488	443	10.43
45—	57,184	1,291	22.58	27,371	715	26.12	29,813	576	19.32
55—	34,183	1,500	43.88	15,556	821	52.78	18,627	679	36.45
65—	15,154	1,325	87.44	6,295	595	94.52	8,859	730	82.40
75—	4,085	631	154.47	1,499	242	161.44	2,586	389	150.43
85 +	331	100	302.11	103	28	271.84	228	72	315.79

We note the remarkably low death-rate at ages 10–14, mainly due to a concurrence of low rates from Zymotic affections.

The death-rate of males at all ages is 19·52 per 1000 living, of females 16·40. Except at ages 5–14, the period of school life, males have a higher death-rate than females ; at ages 20–64 a much higher death-rate.

We may next consider the vital statistics in the three main divisions of the City, the Manchester Township, North Manchester, and South Manchester. If uncertainty exists as to the actual populations of the whole City, this uncertainty is naturally deepened as we come to these divisions.

The birth-rates are exhibited in Tables G and H in the Appendix. The birth-rate of the Manchester Township is considerably higher than that of the other divisions. It is higher in North than in South Manchester. We may compare the facts with those for the 10 years 1891–1900 :—

*Birth-rates.*

	Mean for 1891-1900.		1907.
City of Manchester .....	33·09	....	28·38
Manchester Township .....	35·51	....	31·53
North Manchester .....	32·06	....	28·37
South Manchester .....	32·39	....	27·15*

\* Includes Withington and Moss Side.

The reduction in the birth-rate is probably about the same in each of the three main divisions.

The percentage of illegitimacy is higher in the Manchester Township and in South Manchester than in North Manchester.

In the Manchester Township and North Manchester the number of deaths of infants under one year per 1000 born in 1907 is more than double for illegitimate infants what it is for legitimate. In South Manchester it is nearly double.

The number of deaths under one year per 1000 births is by far the highest in the Manchester Township, South Manchester coming next.

Social conditions play an important part in causing these differences, and it has seemed to me that, if the death-rate were divided into three parts, referred respectively to the Union Hospitals, other institutions, and home, we should obtain a better view of where to look for insanitary conditions, on the assumption that the deaths occurring at home mark off a different social grade, and supply an index of the effects of home life. This is only a partially correct assumption.



Still, the differentiation is valuable. A table is therefore here inserted showing for each Sanitary District in the City the death-rate divided up in the manner mentioned :—

TABLE 5.—1907.—DEATH-RATES\* IN THE HOMES OF THE PEOPLE, IN WORK-  
HOUSES, AND IN HOSPITALS FOR THE VARIOUS DIVISIONS OF THE CITY.

STATISTICAL DIVISIONS	Estimated Populations to middle of 1907	Death-rate per 1000 of persons dying in their own homes	Death-rate per 1000 of persons dying in Workhouses	Death-rate per 1000 of persons dying in Hospitals	Total death-rate per 1000	Mean death-rate 1891-1900
City of Manchester. ...	643,158	13·15	2·94	1·81	17·89	<sup>†</sup> 23·28
I. Manchester Township..	126,662	15·62	6·42	3·06	25·10	30·04
II. North Manchester .....	192,312	12·04	1·11	1·59	14·74	18·31
III. South Manchester .....	324,224	12·84	2·67	1·45	16·95	22·24
I. { Ancoats .....	43,261	16·71	5·25	3·37	25·33	30·37
{ Central .....	25,687	13·66	8·88	4·09	26·63	30·98
{ St. George's .....	57,674	15·67	6·21	2·36	24·24	29·46
II. { Cheetham .....	41,700	8·85	0·79	1·94	11·58	14·50
{ Crumpsall .....	9,369	10·35	1·49	0·43	12·27	15·48
{ Blackley .....	9,715	13·89	0·62	0·93	15·44	17·95
{ Harpurhey .....	22,131	9·71	1·27	1·17	12·15	19·01
{ Moston .....	19,334	10·97	0·47	1·19	12·62	14·11
{ Newton .....	38,851	15·13	1·31	1·72	18·17	19·55
{ Bradford .....	25,185	14·77	1·95	1·99	18·70	23·36
{ Beswick .....	12,487	14·82	1·20	2·32	18·34	20·30
{ Clayton .....	13,540	10·49	0·59	1·26	12·33	17·18
III. { Ardwick .....	44,797	12·41	2·50	1·63	16·54	21·73
{ Openshaw .....	28,824	15·16	1·70	1·42	18·28	21·67
{ West Gorton .....	31,926	12·96	1·82	1·25	16·04	21·52
{ Rusholme and Kirk ...	26,684	13·04	1·42	1·69	16·15	16·05
{ Chorlton-on-Medlock ..	55,988	12·52	4·20	1·45	18·16	21·34
{ Hulme .....	63,353	15·93	4·83	2·13	22·89	25·42
{ Moss Side.....	28,318	11·94	1·06	0·95	13·95	...
{ Withington.....	44,334	8·10	0·83	0·61	9·54	...

\* In this table, *every death* occurring in a Public Institution has been referred to the District from which the patient originally came.

† Exclusive of Moss Side and Withington.

We see from the above table that the death-rates are much more widely divided than the birth-rates. In all three divisions of the City, however, the year 1907 witnesses a great improvement over the mean for the decennium 1891-1900.

The improvement is greatest in North Manchester, and is greater in the Manchester Township than in South Manchester, bearing in mind that the death-rate of South Manchester, less Withington and Moss Side, is 18.60. In all three, as will be seen from columns 6 and 7, the improvement is very striking.

The natural increase of the population—that is to say, the contribution which each district made to the population of the nation in 1907—was 6.43 per 1000 for the Manchester Township, for North Manchester 13.63, and for South Manchester 10.30 per 1000. It is the artizan population and the Jews who are increasing most rapidly in and around Manchester.

#### *Influence of Social Conditions.*

The social condition of the three main sections of the community is reflected in the proportion of the deaths which occurs in public institutions, but particularly in the proportion occurring in the Union Workhouses. In the Manchester Township between one-half and one-third of all deaths occur in institutions, in North Manchester between one-sixth and one-seventh, in South Manchester nearly one-fourth. These figures reflect very different degrees of poverty, and we must ascribe much of the high death-rate in the Manchester Township and in South Manchester to social status and habits. The death-rates occurring in the homes of the people (column 3) is probably a better index to the influence of housing and insanitary conditions than the total death-rate, and though this death-rate is decidedly highest in the Manchester Township, there is not the same difference as exists between the total death-rates.

The course of the death-rate in each main division of the City at all ages, and in six groups of ages, is shown in Table 6, and its immense, though gradual, reduction for each division of the City at every period of life will be matter of rejoicing to everyone who realises how great must be the improvement of the

social circumstances, happiness, health, and efficiency of all sections of the community which these figures reveal :—

TABLE 6.—SHOWING THE REDUCTION IN THE DEATH-RATE FOR ALL AGES,  
AND AT SIX AGE PERIODS FOR EACH OF THE MAIN DIVISIONS  
OF THE CITY SINCE THE YEAR 1891.

*Death-rates at all ages, and at six age periods—Manchester Township.*

Year	All ages	0-4	5-14	15-24	25-44	45-64	65 +
1891	32.03	108.59	5.57	6.32	17.47	51.09	152.81
1892	29.99	101.47	6.17	6.30	15.72	47.33	143.34
1893	30.23	105.85	4.73	5.88	17.09	44.89	144.64
1894	25.27	78.24	5.34	5.25	15.28	40.04	132.04
1895	31.59	106.24	5.42	6.50	18.16	49.08	150.49
....	....	....	....	....	....	....	....
1902	25.13	76.76	4.66	4.80	14.61	44.67	102.41
1903	25.26	87.03	4.69	4.29	13.14	40.28	105.60
1904	26.75	94.11	4.59	5.24	13.15	40.11	121.50
1905	24.39	83.02	4.40	4.30	12.47	38.76	107.98
1906	26.99	95.48	4.49	4.89	13.62	38.40	131.02
1907	25.10	76.22	3.73	4.51	13.37	44.21	124.90

*South Manchester, exclusive of Withington and Moss Side.*

Years	All ages	0-4	5-14	15-24	25-44	45-64	65 +
1891	24.43	80.68	4.62	5.50	13.23	37.34	130.06
1892	21.30	71.47	3.94	5.34	11.10	33.20	106.35
1893	23.02	81.24	4.66	4.78	11.57	32.72	121.68
1894	18.89	65.08	3.12	4.22	10.44	27.34	97.56
1895	23.02	85.78	4.09	4.76	10.32	32.61	111.91
....	....	....	....	....	....	....	....
1902	19.19	61.88	4.16	4.47	9.54	31.83	98.33
1903	19.31	72.24	3.44	4.32	8.53	27.63	99.20
1904	20.51	77.11	3.58	3.88	8.51	30.00	111.83
1905	18.62	55.41	3.43	3.40	7.56	26.65	97.84
1906	19.41	62.04	3.46	3.25	8.27	26.06	100.62
1907	18.60	60.82	3.38	3.40	8.48	30.49	112.61

The figures for 1905 and 1906, except the Death-rates at all ages, refer to the extended South Manchester,



TABLE 6—(continued).

*North Manchester.*

Years	All Ages	0-4	5-14	15-24	25-44	45-64	65 +
1891	21·62	72·23	4·24	5·16	10·94	32·16	121·13
1892	18·77	63·50	3·82	4·33	9·66	26·97	103·79
1893	19·77	68·45	4·46	4·16	9·24	29·14	107·20
1894	15·52	50·48	3·53	4·26	8·19	21·76	87·78
1895	19·53	70·62	4·12	4·50	8·32	27·38	105·84
....	....	....	....	....	....	....	....
1902	17·22	59·38	3·67	3·95	7·95	26·75	97·39
1903	15·20	53·15	3·35	3·49	6·54	23·51	87·13
1904	17·12	61·04	3·26	3·75	7·97	25·81	94·90
1905	14·89	48·79	3·04	3·64	6·53	23·96	95·41
1906	15·71	54·48	3·45	2·57	6·98	24·79	95·18
1907	14·74	44·75	2·59	3·00	7·34	25·07	102·95

## VITAL STATISTICS OF THE SANITARY DISTRICTS.

We may now consider the various Sanitary Districts of which the main divisions are composed. Increased uncertainty attaches to the populations of individual districts, and the errors must necessarily be larger than for the main divisions.

The calculated death-rates for 1907 and the mean death-rates for the years 1891-1900 are here shown :—

	1907.		1891-1900.
Ancoats .....	25·38	....	30·25
Central .....	26·63	....	31·01
St. George's.....	24·24	....	29·52
Cheetham .....	11·58	....	14·61
Crumpsall .....	12·27	....	15·19
Blackley.....	15·44	....	18·10
Harpurhey.....	12·15	....	19·20
Moston .....	12·62	....	14·27
Newton Heath .....	18·17	....	19·61
Bradford .....	18·70	....	23·50
Beswick .....	18·34	....	20·29
Clayton .....	12·33	....	17·24
Ardwick .....	16·54	....	21·78
Openshaw .....	18·28	....	21·69
West Gorton .....	16·04	....	21·56
Rusholme and Kirk.....	16·15	....	16·13
Chorlton-upon-Medlock .....	18·16	....	21·38
Hulme .....	22·89	....	25·48
Moss Side.....	13·95	....	—
Withington .....	9·54	....	—



It will be seen that the year 1907 shows a marked advance over the earlier period, and that the greatest improvements have occurred in the following districts: St. George's, Ancoats, and Central in the Manchester Township; Cheetham, Harpurhey, Bradford, and Clayton in North Manchester; Ardwick and West Gorton in South Manchester.

If the birth-rates be compared in like manner, we find that a general reduction has taken place, except in Rusholme, in which there is marked increase; in Beswick, in which the birth-rate is stationary; and in Blackley, in which district there is a slight increase. The greatest reductions have occurred in Harpurhey and Bradford in North Manchester; in Ardwick and West Gorton in South Manchester; and in the three Sanitary Districts in the Manchester Township. These correspond closely to the districts in which the greatest reduction of the death-rate is shown for 1907. Hence, temporary reductions in the birth-rate are liable to be attended with temporary reductions in the death-rate. As regards the natural rate of increase, this is higher in 1907 than in 1891-1900. In 1907 it is higher in the following districts:—Ancoats, St. George's, Blackley, Beswick, Clayton, Ardwick, Openshaw, and Rusholme. In Cheetham, Newton Heath, and Hulme it stands nearly at the same figure. In both periods it is highest in Cheetham and Beswick.

From Table G we see, also, that the natural rate of increase in the City was, in 1907, 10.49 per 1000, which is very nearly the same as the mean for the 10 years 1891-1900.

The distribution of this rate of increase, however, was not quite the same, being greater in the Central Districts in the last year—a doubtful gain.

If, however, the improvement in the death-rate appears to be keeping pace with the decline in the birth-rate, it is to be remembered that the former is precarious, the latter steady. Moreover, as the population continues to grow older, this improvement must begin to decline, unless sanitary advance moves at an accelerated pace.

The natural rate of increase continues to be greatest in the Cheetham district, which means that the Jewish community is increasing at a greater rate than any other part of the population. The percentage of illegitimate children is not increased over the whole City, but is conspicuously high in Crumpsall and Chorlton-upon-Medlock, a circumstance to which attention has formerly been directed. It is also high in Moss Side, Hulme, and the Central Districts.

Infantile mortality is highest in the Manchester Township, corresponding to the lower social condition of the population, and in the Manchester Township it is highest in the Central District. But it is also very excessive in Ancoats and St. George's.

In 1907, Hulme has a higher infantile mortality than St. George's, followed closely by West Gorton, Chorlton-upon-Medlock, and Beswick. After these come Openshaw, Newton Heath, and Bradford.

#### CAUSES OF DEATH IN 1907.

A summary of the death-rate from all causes and from a number of causes of death over a long series of years is given for the whole City in Tables E and F in the Appendix, to which reference should be made. Table E deals with infectious diseases, Table F with the principal groups causing high mortality. Table E also shows the gradual decline of the birth-rate from 38.9 per 1000 in 1871-75 to 28.4 per 1000 in 1907. The marriage-rate, on the other hand, has remained nearly stationary since 1876-1880.

The death-rate has declined from 28.3 per 1000 in 1871-75 to 17.9 per 1000 in 1907, thus falling to a greater extent than the birth-rate. Moreover, the rate of fall has been especially rapid in recent years.

As regards infectious diseases, we see from Table E that no steady fall has occurred in the death-rate from Measles and Whooping Cough, although the death-rate from Measles in 1907 is low. That from Whooping Cough, however, is high.

From Smallpox there has been no death since 1904.

From Scarlet Fever the death-rate declined from 1.08 per 1000 in 1871-75 to 0.12 per 1000 in 1905. Since then it has been higher, and last year stood at 0.18 per 1000.

The death-rate from Diphtheria in 1871-75 was 0.08 per 1000, in 1907 0.18 per 1000. Between these periods it underwent considerable increase, rising to 0.32 per 1000 in 1886-90. In 1907 it was lower than in other recent years, although it fell considerably below its present height in the years 1896-1899.

From Whooping Cough the death-rates in recent years are lower than at former periods up to the year 1900, although there is a rise in 1907.

From Typhus Fever no death has occurred since 1901.

From Enteric Fever there has been a great descent in the death-rate since 1891, in which year the death-rate was 0.37 per 1000. In 1907 it was 0.06. This is a very costly disease, not merely because the deaths are chiefly of male adults, but because the disease is a prolonged one, a circumstance which causes loss of employment and serious disablement. The saving of life here recorded, therefore, great as it is, is an imperfect measure of the pecuniary and other saving effected.

From Diarrhoea there was a great diminution in the death-rate in 1907, due to the coolness of the summer.



There have been some signs of a diminution in this most fatal disease of infancy since 1901, but if we take the 10 years 1898-1907, no diminution, but rather an increase, on previous years must be recorded. This disease owns two chief causes—filth exposed near dwellings, and maternal neglect. Amongst the most powerful contributory causes have been the midden privy and pail systems of collecting excreta, and the great collections of horse manure, often in the vicinity of dwellings.

But the tips and refuse depots in different parts of the City and its borders probably contribute to no small extent.

Deaths from violence show but little sign of diminution. The proportion of deaths sat upon by the Coroner reached its highest point in 1907. It might profitably have been higher, seeing that no fewer than .09 per cent. of the deaths passed uncertified.

From the same table it will be seen that the proportion of deaths occurring in public institutions again underwent a rise in 1907. In 1891 the percentage was 18.4, in 1907 it was 27.4. No doubt, part of the reduction in the death-rate is due to the increased remission of cases of severe illness to public institutions, where they can receive suitable nursing and protection.

A table in the Registrar-General's Annual Summary enables us to compare the death-rates occurring from the above causes in Manchester in 1907, not only with the corresponding rates for each of the 76 great towns, but also with the average rates for the same disease in each town in the 10 years 1897-1906 (pp. 12-14).

We there find that the death-rates in Manchester from Measles, Scarlet Fever, Diphtheria, Enteric Fever, and Diarrhœa were below the average in the preceding 10 years ; for Whooping Cough above the average.

From Measles, Diphtheria, and Enteric Fever the death-rate in 1907 was below that of the 76 great towns ; from Scarlet Fever, Whooping Cough, and Diarrhœa it was above the average rate. It was, however, not nearly so much above the average rate from Diarrhœa as usual.

Possibly this fact and the reduction under Enteric Fever are in relation with the rapid diminution of midden privies, but time is needed to judge whether this is so.

Turning to Table F, we obtain a general view of the course of mortality in the City from those causes of death under which the largest numbers fall. Under Cancer we perceive that in 1907 there was a welcome remission in the ever-ascending death-rate from this most terrible malady. This remission was chiefly in North Manchester

The death-rate from Phthisis has not again reached the low-water mark of 1905, but has not ascended from its position in 1906. On the other hand, though there is a marked reduction under other Tubercular Diseases, there is a slight increase under Abdominal Tuberculosis. One is not inclined to lay much stress on this figure, since the condition is one peculiarly difficult to diagnose. The improvement under Tuberculosis is maintained in 1907.

Under Nervous Diseases there is an improvement on all previous years, due to the continued fall under the heading Convulsions, which is not properly an affection of the nervous system at all. It will be seen that there has been a steady fall under this heading for a number of years.

Under Heart Disease no improvement is manifest.

Under Respiratory Disease there is an increase in mortality over other recent years, although the rate is somewhat below the average rate for 10 years. From Table K in the Appendix, we see that Bronchitis figures more largely than Pneumonia in the rise of 1907.

Pneumonia is the unsolved problem of Manchester. In 1907 Epidemic Influenza had to do with the increase under both Pneumonia and Bronchitis.

Had it not been for the rise under Respiratory Disease, the death-rate for 1907 would have been lower than in other recent years.

From Urinary Disease, and especially from Nephritis, there was an increased death-rate in 1907, possibly due to cold weather.

Diseases of the Generative System caused a lower death-rate than in other recent years.

From Puerperal Fever the death-rate was below the average, a circumstance of great importance, not so much on account of its magnitude, as because this death-rate is an index of much serious and abiding illness.

The death-rate from child-birth was the lowest on record, and, strangely, was lowest in the City, as constituted before extension in 1904.

Table J furnishes the usual figures relating to mortality in the first year of life. If these be compared with the mortality from different causes given for the years 1894-1903 in the Annual Report for 1904, it will be seen that the chief causes of mortality remain the same, viz.: Wasting Diseases (including Prematurity), Lung Diseases other than Tuberculosis, and Diarrhœa.

From every cause, except Whooping Cough and Lung Diseases, there is a reduction in 1907.



The reduction in the mortality is greatest under the heading Diarrhœa, but it is also great under Tubercular Diseases, Measles, Convulsions, Nervous Diseases other than Convulsions, Wasting Diseases, and "Found dead in bed."

The great reduction under Tubercular Diseases may reasonably be referred in part to control of the milk supply. Under Convulsions we may claim something for the instruction of mothers in the proper dieting of their children. The improvement in Wasting Diseases is associated with the low death-rate from Diarrhœa. The lowered death-rate under "found dead in bed" is to be ascribed, in part at least, to lessened drunkenness.

The subject requires fuller treatment, but is briefly dealt with here, as part of the general statistics.

It will be noticed that, except from infectious disease, the infantile mortality is highest in the Manchester Township, and next in South Manchester, showing that maternal care and good nurture have had much to do with its causation.

Table K permits of a comparison of the death-rate in 1907 per 1000 persons living, from all causes and from a number of causes in the City of Manchester, in the City less Withington and Moss Side, in South Manchester, in South Manchester exclusive of Withington and Moss Side, in North Manchester, and for 1897-1906 in the City of Manchester.

We thus see that in by far the greater number of diseases the death-rate is highest in the Manchester Township, and next highest in South Manchester, corresponding to the average social condition of the population.

This is the case with Enteric Fever, Diarrhœa, Phthisis, Alcoholism, Cancer, Nervous Diseases (which include Convulsions), Heart Disease, Bronchitis, Pneumonia, and Diseases of the Digestive Organs. The great excess of the death-rate in the Manchester Township under Phthisis, Bronchitis, and Pneumonia should be especially noted.

Under other heads the death-rate is greatest in the Manchester Township, but is not greater in South Manchester than in North Manchester.

Such is the case for 1907 with Diphtheria, Puerperal Fever, Erysipelas, and Septicæmia.

North Manchester has the highest death-rate from Scarlet Fever.

South Manchester has the highest death-rate from Influenza, Whooping Cough, Tubercular Meningitis, Rheumatic Fever, Premature Birth, Respiratory Diseases other than those already named, and Diseases of the Urinary Organs.

The exclusion of Withington and Moss Side has the greatest effect on the death-rates from the following causes:—Measles, Whooping Cough, Scarlet Fever and Diphtheria, Diarrhœa, Phthisis, Premature Birth, Bronchitis, and Pneumonia.

From the different incidences of the chief causes of death on the three main divisions of Manchester, it is easy to understand how the death-rates differ so widely.

COURSE OF THE MORTALITY FROM THE CHIEF CAUSES OF DEATH IN THE  
THREE MAIN DIVISIONS OF THE CITY FROM ONE YEAR TO ANOTHER.

In the Annual Report for 1906 tables were given at pages 25, 28, and 30 which permitted a comparison in the three main divisions of the City, from various causes of death, for each year, and also allowed the course of the different classes of disease to be followed for a number of years. These tables will not be reproduced in this report.

The following table, however, supplies the data for 1907 in a summarised form :—

DEATH-RATES FROM THE UNDERMENTIONED CAUSES IN EACH OF THE MAIN  
DIVISIONS OF THE CITY FOR THE TEN YEARS 1897-1906, AND 1907.

	Manchester Township		South Manchester		North Manchester	
	1897-1906	1907	1897-1906	1907	1897-1906	1907
Diarrhœa .....	2·11	0·77	1·32	0·44	1·24	0·40
Phthisis .....	3·21	3·09	1·80	1·60	1·21	1·16
Cancer .....	0·87	0·96	0·82	0·84	0·66	0·57
Nervous Diseases .....	1·47	1·33	1·19	1·06	} 3·25 {	0·84
Diseases of the Heart and Blood-vessels .....	3·06	3·08	2·74	2·67		2·08
Bronchitis .....	2·74	3·29	1·85	1·96	1·67	1·67
Pneumonia .....	3·09	3·17	2·11	2·11	1·76	1·65
Digestive Organs .....	1·14	1·00	1·01	0·85	0·83	0·69
Bronchitis, Pneumonia, and Phthisis .....	9·05	9·55	5·77	5·71	4·65	4·48
Tuberculosis other than Phthisis .....	0·92	0·76	0·86	0·70	0·50	0·36
All causes .....	27·55	25·10	20·73	18·60	17·00	14·74

This table shows the wide differences existing between the different divisions of the City in respect of Diarrhœa, Tuberculosis, Bronchitis, and Pneumonia.



It shows, also, that from Bronchitis, Pneumonia, and Cancer the death-rate in North Manchester in 1907 is below the average death-rate for 10 years, this relation being the reverse of that holding in the other divisions, a circumstance which may be due to the improvements carried out in North Manchester, but which suggests also the possibility that the population of North Manchester may be overestimated.

#### CAUSES OF DEATH IN MALES AND FEMALES.

From Tables B and C we are able to compare the causes of death in the two sexes, and so to see how it is that the male death-rate so greatly exceeds the female.

The number of deaths in males exceeds that of females greatly from all diseases affecting the very young, Premature Birth and Congenital defects, Marasmus and Atrophy, Epidemic Diarrhœa, Measles, Whooping Cough, Scarlet Fever, and Convulsions.

There is also a very great excess in the male mortality from Tubercular Disease, the male death-rate from Phthisis in 1907 being not far short of double that of the female. The male death-rate exceeds the female, also, from Pneumonia, Diseases of the Digestive System, Enteric Fever, Diseases of the Urinary System, Violence, and Alcoholism, though not to the same extent as under the causes previously named.

The female death-rate, on the other hand, is markedly in excess from Cancer, Diseases of the Circulation, Bronchitis, and Old Age.

#### DISEASES WHICH CAUSE THE MORTALITY AT DIFFERENT AGES.

These may be followed in Table M. *At ages under 5* the most important cause of death in 1907 was Lung Disease. Infectious diseases occupy a large place, Measles and Whooping Cough together making up about one-eighth of the mortality, while Tubercular Disease and Diarrhœa produce together about an equal part of it. Diseases of the Nervous System and of the Digestive System are also prominent contributors.

*At ages 5-14 years*, the period of school life, the most important cause of death is Tubercular Disease, followed by Diseases of the Respiratory System. These together furnish between one-half and one-third of the deaths. Scarlet Fever and Diphtheria give over one-seventh.

*At ages 15-24*, Tubercular Diseases alone furnish more than one-third of the total mortality, while Tubercular Disease and Lung Disease supply one-half. Heart Diseases make up one-eighth.

*At ages 25-44*, Tuberculosis is still the most formidable disease, causing between one-third and one-quarter of the deaths. Heart Disease furnishes rather over one-eighth, Lung Disease other than Phthisis accounts for between one-fifth and one-sixth. Diseases of the Nervous System have now become prominent.

*At ages 45-64*, Respiratory Disease other than Phthisis furnishes the largest contribution of deaths, which number more than one-quarter of the total. Heart Disease comes next with less than one-quarter. Tubercular Disease continues to exact a high mortality, and supplies between one-seventh and one-eighth of the deaths. Malignant Disease is responsible for over one-tenth.

*At 65 and upwards*, Diseases of the Heart and Blood-vessels become the most prominent cause of death, and cause not much short of one-third of the deaths, while Respiratory Disease supplies over a quarter. Malignant Disease is relatively less destructive than at ages 45-64, although the actual death-rate is nearly double.

We thus see what are the most formidable forms in which the system is assailed as the individual advances from one age to another, and these figures give the keynote to prevention, although much of the preventive work must necessarily be transacted outside the domain of the Sanitary Authority.

Table N permits us to follow the course of the same disease groups through the same age periods for the three main divisions of the City. This table has been omitted from the present report, as much uncertainty attaches to the figures at this distance from the Census.

The indications which the table gives, however, agree with those which we obtain from more reliable data.

We find, as usual, a great excess in mortality from Tubercular Disease and from Respiratory Diseases other than Phthisis in the Manchester Township from the age of 25 onwards, this excess being most marked at the age period 45-64.

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## INFECTIOUS DISEASES.

The diseases included in the Infectious Disease (Notification) Acts, 1889 and 1899, are as follows: Smallpox, Scarlet Fever, Diphtheria, Membranous Croup, Typhus Fever, Enteric or Typhoid Fever, Relapsing Fever, Continued Fever, Puerperal Fever, Erysipelas, and Asiatic Cholera. The following cases were notified in 1907 and in the ten



previous years, and the year 1907 is compared with the average of the previous ten years :—

	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Aver'ge for 10 Years	1907
Smallpox .....	...	...	2	3	1	27	422	134	6	5	60	2,791
Scarlet Fever ...	1,790	897	1,467	2,507	2,692	2,282	2,012	2,063	1,975	3,075	2,076	2,791
Diphtheria.....	150	196	248	337	457	422	620	474	530	551	399	494
Memb. Croup }												
Typhus Fever ...	2	...	3	5	39	...	...	...	...	...	5	...
Enteric Fever ...	503	642	381	378	359	378	387	325	345	384	408	2,791
Relapsing Fever	...	...	...	...	...	...	...	...	...	1	...	...
Puerperal Fever	49	44	35	49	55	47	30	42	82	106	54	...
Erysipelas .....	...	...	...	177	318	253	291	266	351	383	†291	3,981
	2,494	1,779	2,136	3,456	3,921	3,409	3,762	3,304	3,289	4,505	3,293	3,981

† Average 7 years.

The number of cases of Scarlet Fever notified in 1907 was greater than in any recent year except 1906. The season was cool, or the number would probably have been greater. We cannot, in consequence, anticipate any diminution in 1908. Under Diphtheria, Enteric Fever, Puerperal Fever, and Erysipelas, there was a diminution from the number notified in 1906. There is a general correspondence between the numbers for Puerperal Fever and Erysipelas, and those for Scarlet Fever. In recent years more cases of Puerperal Fever have been notified than was formerly the case.

The number of deaths for eleven years from the more common diseases is shown in the following table, 1907 being compared with the average of the previous ten years :—

From	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Aver'ge for 10 Years	1907
Measles .....	628	271	699	254	292	242	345	425	231	475	386	2,791
Scarlet Fever ...	124	65	46	105	127	146	97	85	78	108	98	1,145
Diphtheria.....	46	51	85	101	133	123	136	99	127	119	102	1,145
Memb. Croup }												
Enteric Fever ...	95	120	73	75	75	66	93	66	55	83	80	...
Smallpox .....	...	...	...	...	...	...	24	9	...	...	3	...
Influenza .....	107	64	219	239	99	80	62	97	95	90	115	1,145
Whooping Cough	299	170	227	371	224	242	213	280	195	193	241	3,981
	1,299	741	1,349	1,145	950	899	970	1,061	781	1,068	1,025	8,981

SMALLPOX.

Five cases of Smallpox occurred in the year 1907, in the districts of Openshaw, Clayton, Bradford, and Cheetham. There was reason for suspecting that the first case was contracted from an overlooked case, who had contracted the disease in a neighbouring town. But no proof was obtained. In fact, in none of the other four cases was the source of infection ascertained, although in three of them there was suspicion that they were due to overlooked cases traceable to the first unknown originating case. The fifth case had no relation to these four.

Particulars are given underneath.

All were removed to Clayton Hospital, and there were no deaths.

	District	Sex	Age	Rash 1907	Admitted	Discharged	Type	VACCINATION		Occupation	Rest of Family	Re-vaccinated or recently vaccinated	Source
								Number	Area				
1	Openshaw ...	M	42	2 II.	4 II.	25 II.	Discrete	2	$\frac{1}{4}$ "	Coffee stall keeper	6	5	Probably over- looked case from Ashton
2	Bradford ....	M	24	20 II.	23 II.	1 I III.	Semi- confluent	4	$\frac{5}{16}$ "	Labourer in forge	3	3	Probably over- looked attack in wife
3	Clayton .....	F	26	10 III.	13 III.	27 III.	Discrete	4	$\frac{3}{8}$ "	Housewife	5	5	Probably from wife of above case
4	Bradford ..	F	20	9 III.	13 III.	27 III.	Discrete	3	$\frac{1}{2}$ "	Clerk	4	4	As above
5	Cheetham ...	M	37	18 VI.	20 VI.	1 I VII.	Discrete	3	$\frac{7}{16}$ "	Door-to- door traveller	3	3	Untraced





During the last 20 years the numbers of attacks per 10,000 living are as follows :—

Year.....	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897
	38	35	51	48	50	58	43	39	44	33

---

Year.....	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
	16	27	46	49	42	36	37	34	52	43

The year 1898 formed the bottom of the last wave of incidence, and the year 1901 its crest.

Since then there has been a gradual decline in incidence to a minimum in 1905. This has been followed by a rapid rise in 1906.

A similar rise occurred in the year 1890.

The distribution of the disease is shown in the following table. It will be seen that it is widely distributed.

TABLE 3.—1907—SCARLET FEVER ATTACKS IN DISTRICTS, WITH ATTACK RATE, CASE FATALITY PER CENT., AND REMOVALS TO HOSPITAL PER CENT.

DISTRICTS	ATTACKS	ATTACK RATE PER 1,000 LIVING	CASE FATALITY PER CENT.	REMOVALS TO HOSPITAL PER CENT.
Ancoats .....	184	4·25	6·5	75·0
Central .....	89	3·46	3·4	76·5
St. George's .....	232	4·02	3·9	73·3
Cheetham .....	172	4·12	2·9	63·4
Crumpsall .....	48	5·12	2·1	62·5
Blackley .....	68	7·00	4·4	60·3
Harpurhey .....	116	5·24	2·6	63·0
Moston .....	141	7·29	4·3	49·0
Newton Heath .....	206	5·30	3·4	56·8
Bradford .....	115	4·57	7·8	76·6
Beswick .....	58	4·64	5·2	75·9
Clayton .....	50	3·69	2·0	64·0
Ardwick .....	205	4·58	4·4	62·9
Openshaw .....	180	6·24	3·3	55·6
Gorton (West) .....	194	6·08	4·6	61·9
Rusholme and Kirk.....	148	5·55	2·7	60·9
Chorlton-on-Medlock .....	207	3·70	...	65·2
Hulme .....	208	3·28	2·9	74·0
Moss Side .....	111	3·92	0·9	62·2
<b>City of Manchester ...</b>	<b>2,732</b>	<b>4·25</b>	<b>3·6</b>	<b>65·0</b>

The case fatality rates in 1907 are highest in Ancoats, Bradford, and Beswick; the attack rates in Openshaw and West Gorton. The percentage of removals to Hospital is lower than in other recent years. This is not fortuitous, but is owing to an effort to restrict the use of the Hospital to those cases in which there is special need for isolation.

The case fatality per cent., though very slightly higher than in 1905, is below the average for the last five years.

Year.....	1901	1902	1903	1904	1905	1906	1907
Case fatality per cent.	4·6	6·2	4·7	4·1	3·5	3·6	3·6

TABLE 4

Gives the age distribution of 27,681 cases of Scarlet Fever, and shows the case fatality per cent. at different ages.

This is greatest in the first year of life, and declines rapidly up to the age period 10-15, after which age an attack of Scarlet Fever appears to be attended with increased risk.

SCARLET FEVER.—NUMBER OF ATTACKS, AND OF DEATHS; ALSO THE CASE FATALITY PER CENT. AT DIFFERENT AGES, FOR THE THIRTEEN YEARS 1894-1906, AND FOR 1907.

AGES	1894-1906			1907		
	ATTACKS	DEATHS	CASE FATALITY PER CENT.	ATTACKS	DEATHS	CASE FATALITY PER CENT.
Under one year ...	309	64	20·7	24	7	29·2
1 to 2 years ...	961	154	16·0	82	10	12·2
2 to 3 „ ...	1,911	247	12·9	153	12	7·8
3 to 4 „ ...	2,517	266	10·6	267	14	5·2
4 to 5 „ ...	2,915	229	7·9	245	15	6·1
5 to 6 „ ...	2,896	118	4·1	309	10	3·2
6 to 7 „ ...	2,740	99	3·6	229	5	2·2
7 to 8 „ ...	2,384	63	2·6	235	3	1·3
8 to 9 „ ...	1,984	38	1·9	200	6	3·0
9 to 10 „ ...	1,659	31	1·9	188	4	2·1
10 to 15 „ ...	4,692	73	1·6	514	4	0·8
15 to 20 „ ...	1,402	34	2·4	132	3	2·3
20 to 25 „ ...	618	10	1·6	67	1	1·5
25 to 35 „ ...	520	15	2·9	67	3	4·5
35 to 45 „ ...	132	4	3·0	17	...	...
45 to 55 „ ...	36	2	5·6	2	...	...
55 to 65 „ ...	5	...	...	1	...	...
Over 65 „ ...	...	...	...	...	...	...
All Ages .....	27,681	1,447	5·2	2,732	97	3·6

The following table shows the actual death-rates from Scarlet Fever in 1907. These were highest in North Manchester, then in the Manchester Township. The death-rate for the City was high as compared with that for London, for England and Wales, or for other towns:—

TABLE 5.—SCARLET FEVER MORTALITY, 1907.—RATE PER 1,000 LIVING,  
COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean	1907
England and Wales .....	0·19	0·12	0·11	0·11	0·10	<b>0·13</b>	0·09
76 Great Towns .....	0·19	0·14	0·12	0·13	0·12	<b>0·14</b>	0·12
London .....	0·12	0·08	0·08	0·12	0·11	<b>0·10</b>	0·14
<b>Manchester City</b> .....	0·27	0·17	0·15	0·13†	0·19†	<b>0·18†</b>	0·18†
Manchester Township .....	0·21	0·14	0·17	0·15	0·27	<b>0·19</b>	0·20
North Manchester .....	0·31	0·21	0·16	0·10	0·20	<b>0·20</b>	0·22
South Manchester .....	0·26	0·17	0·14	0·15†	0·14†	<b>0·17†</b>	0·14†
142 Smaller Towns .....	0·14	0·12	0·13	0·11	0·09	<b>0·12</b>	0·08
Rural Districts .....	0·10	0·10	0·09	0·09	0·08	<b>0·09</b>	0·06

† Exclusive of Moss Side and Withington.

It will be seen that there is an increase in the death-rate from Scarlet Fever during 1907 as compared with 1903, 1904, and 1905, and that the rate is equal to the mean of the last five years.

The case fatality per cent. of those attacked, however, is below the average for the previous five years, as shown under Table 3.



The following table shows that the percentage of notified cases removed to Hospital is lower than in any year since 1893:—

TABLE 6.—SCARLET FEVER.

		1892	1893	1894	1895	1896	1897	1898	1899
Manchester Township.	Removal to Hospital, } per cent. ....	71·1	76·3	79·1	82·0	83·5	89·2	85·8	87·2
	Death-rate per 1,000...	0·35	0·23	0·26	0·37	0·41	0·27	0·11	0·08
Entire City.	Removal to Hospital, } per cent. ....	58·5	58·6	66·0	71·3	73·9	79·7	73·1	74·4
	Death-rate per 1,000...	0·27	0·27	0·22	0·33	0·37	0·23	0·12	0·08
		1900	1901	1902	1903	1904	1905	1906	1907
Manchester Township.	Removal to Hospital, } per cent. ....	88·0	88·5	88·8	91·9	88·6	82·3	75·1	74·5
	Death-rate per 1,000...	0·16	0·24	0·21	0·14	0·17	0·15	0·27	0·20
Entire City.	Removal to Hospital, } per cent. ....	80·9	82·3	81·2	83·4	79·8	72·9	66·3	65·0
	Death-rate per 1,000...	0·19	0·23	0·27	0·17	0·15	0·13	0·19	0·18

TABLE 7.

The following table shows the interval in days between the return home of the primary case and the rash of the subsequent case for the years 1904 and 1905, and the same for 1906, except that in the case of 1906 the interval is reckoned to the day of onset in the subsequent case:—

Days	-7	-14	-21	-31	-41	-51	-61	-71	-81	Total
1904 ....	47	38	23	13	11	6	..	..	..	138
1905 ....	17	24	11	13	1	4	2	3	1	76
1906 ....	44	49	16	9	9	6	2	2	..	137
1907 ....	26	28	16	7	5	..	..	..	..	82

The above figures for 1907, as for other years, include the cases infected secondarily by return cases to the number of 13—three within seven days,

seven in the second week, and three in the third week. When these are taken out the above numbers become 23, 21, 13, 7, and 5—total, 69.

In addition, there were seven cases not in the same house, which may have been infected by contact with a case discharged from the hospital—one in the first, one in the second, three in the third, one in the fourth, and one in the fifth week. These figures show a distinct improvement on those for 1906, and, if we take the number of admissions into account, on each of the three previous years.

They include four return cases from Baguley Hospital, one in each of the first four weeks after discharge.

Of the presumed infecting discharged cases, the following had the under-mentioned complications after discharge; 23 causing returns in the first week had five of them aural discharge, four nasal discharge, 1 desquamation. The remaining 13 presented no special feature.

Of 20 associated with return cases at home in the second week, none had any complication after discharge; of 13 associated with return cases in the third week, two had aural and three nasal discharges.

Of seven associated with return cases in the fourth week, none had any complications; of five associated with returns in the fifth week, one had nasal discharge and one desquamation. The majority presented nothing abnormal either at or after discharge.

Two cases are recorded of apparent infection in the second week after the recovery of a previous case nursed at home. The infrequency of such cases has been repeatedly noted.

#### GENERAL OBSERVATIONS.

This disease has a short incubation period of less than a week; most commonly of two to four days. It is marked by a sharp sudden onset, with headache, vomiting, quickly followed by sore throat and a characteristic eruption, which generally disappears within a week, and is followed by a characteristic desquamation. The lymphatic glands at the angle of the jaw quickly become enlarged. The tongue presents the strawberry appearance. There are, however, very many anomalous cases. Sometimes the onset is not well marked. Frequently no eruption, or only a passing one, is present. Very often the illness is of exceedingly brief duration. For these reasons attacks are frequently overlooked. Often also there is some difficulty in distinguishing Scarlet Fever from Diphtheria, or from some acute affection of the tonsils.

As a rule the affection is slight, and soon passes off, leaving no after effects. But in other cases septic affections of the throat and nose of a most painful and fatal character occur. In others again, the amount of infection is so abundant as to induce a delirious and very dangerous condition. Catarrh of the ear passages often appears early. About the end of the first week Rheumatism and Heart Disease may supervene. Later on Nephritis may set in. Secondary Glandular Inflammations may occur in the neck. Chronic Nasal Catarrh is liable to occur. Abscesses may form in other parts of the body. Septic affections, therefore, play a very prominent part in adding to the severity of the cases.

Cases of Scarlet Fever are by far most infectious at the commencement of the disease.

This is well seen from the following table, taken from the Annual Report for 1901:—

CASES TREATED AT HOME, 1900 AND 1901.

Number of primary cases treated at home and not overlooked	Susceptible persons under 15 years of age left at home	Total number left	Number of households in which subsequent cases occurred			
590	564	2451	74			
Primary cases overlooked 186	378	894	102			
		Number of cases occurring within 8 days, at 8-14 days, and so forth after the eruption appeared in the first case				
Number of subsequent cases	within 8 days	-14	-21	-31	-41	42 +
Primary case not overlooked 97	71	10	6	7	1	2
Primary case overlooked 159	87	38	17	14	2	1

When the primary case has been overlooked, and no isolation, therefore, has been practised, the subsequent cases are distributed in a somewhat different manner from those following on cases treated at home which have not been overlooked, as might be expected. But the majority of the subsequent cases still fall within the first eight days after the occurrence of the first attack.



We see that three attacks occur at a period exceeding 42 days after the commencement of illness in the first attack among 689 persons under 15 years of age stated not to have previously had the disease; not a high proportion. But the infectiveness of some cases after their release from quarantine may be inferred from the numbers known to have contracted Scarlet Fever in successive years after 42 days had elapsed from the commencement of illness in the primary case treated at home—42 days being taken as the regular period of isolation.

In 1894 no case occurred after removal of quarantine from the primary case treated at home, and at a later period than 42 days from the commencement of the first illness. In 1895 there were five cases; in 1896, four; in 1900, three; in 1901, none after 41 days; in 1903, one case after 41 days. Total, in five years, 13 cases. Thus, although rarely, cases after release from quarantine at home are presumably able to infect those not previously attacked after 42 days from their commencement.

It follows that cases of Scarlet Fever, though most highly infectious in the first week, continue to be infectious in a rapidly-diminishing degree, if nothing interposes to add to their potency of infection. If, however, the tables be consulted which are given in the Annual Reports showing the numbers attacked at successive periods after the first case commenced in cases treated at home (as, *e.g.*, for 1895, 1901, and 1904), it will be seen that the number of subsequent cases shows no increase corresponding to the period of release from isolation, but continues to decline to vanishing point. This cannot be ascribed to the failure of susceptible material.

Scarlet Fever has a comparatively low degree of infectiveness. That is to say, let a case of Scarlet Fever occur among a number of susceptible children, there will not be nearly the number affected that there would be in the case of Measles and Whooping Cough. This is, doubtless, due partly to the greater degree in which the infections of Measles and Whooping Cough are discharged in the act of coughing, and partly to the marked onset of Scarlet Fever, which leads to the removal of the infecting case before the infecting period is fully established.

The trend of modern opinion is to regard the cutaneous eruption as non-specific, and as being in the nature of a toxic rash. This is, however, a doubtful view, and it is safer to take early precautions to prevent discharge of infection from the skin. We know nothing definitely of the bacteriology of Scarlet Fever, and have not that aid to our conclusions. The belief that infection is derived from the throat and nose rests on investigations such as those of Dr. M. H. Gordon, which go to show that in the act of speaking bacteria are shot out from the mouth, and may travel considerable distances.

We do not know that these investigations are applicable to Scarlet Fever, and it is not certain that they would explain the early occurrence of infection in slight cases.

There are some pathological reasons for suspecting that the excretal discharges contain the infection of Scarlet Fever as the disease advances. The association of Scarlet Fever with certain forms and positions of closets appears to be fairly close. It is safer to assume that the method of collecting excreta has to do with the prevalence of Scarlet Fever.

Scarlet Fever does not spread aërially to any great distance. It diffuses slowly in a school, in general, and it does not pass over easily from one department of a school to another. It does not appear to spread from Scarlet Fever wards to Diphtheria or Enteric wards when the staffs are kept distinct. On the other hand, instances arise when it seems to be carried by an intermediate agent not affected with the disease, and it would be strange if this were not so. It is desirable, however, that special attention should be paid to such cases, and that a collection should be made of them, as they would throw considerable light on what really happens when return cases occur.

On the other hand, infection appears to cling to any article which has been in possession of a child attacked by Scarlet Fever, and the retention of articles of clothing from disinfection has been credited with the production of the disease.

There have also been instances in which infected articles put away for a time have appeared to cause the disease when produced after a considerable interval. A certain amount of doubt must always attach to such instances.

The number of cases of Scarlet Fever occurring in any one week, and notified by medical practitioners, varies from week to week. If these are arranged according to the dates at which the eruption appeared, in weeks, in each of the 10 years 1897 to 1906, and the numbers in corresponding weeks added together, we get a mean weekly incidence thus :—

CASES COMMENCING IN WEEKS, 1897-1906.

1..... 357	14..... 308	27..... 389	40..... 532
2..... 361	*15..... 274	28..... 369	41..... 540
3..... 405	16..... 323	29..... 392	42..... 590
4..... 390	17..... 320	30..... 376	43..... 556
5..... 324	18..... 334	31..... 345	44..... 567
6..... 289	19..... 359	32..... 323	45..... 562
7..... 337	20..... 316	33..... 347	46..... 485
8..... 357	21..... 348	34..... 405	47..... 511
9..... 322	22..... 331	35..... 448	48..... 497
10..... 336	23..... 352	36..... 468	49..... 434
11..... 329	24..... 388	37..... 484	50..... 423
12..... 310	25..... 407	38..... 548	51..... 359
13..... 295	26..... 407	39..... 503	52..... 390



It will be seen that 10 years is an insufficient period to supply a smoothly graduated curve. Generally, however, we see that on the mean of 10 years the numbers ascend from the beginning of April to the middle of October, and descend through the rest of the year, the ascent and descent taking nearly equal periods. The highest number in one week is more than double the lowest number, but there is no wide division such as occurs in the case of Summer Diarrhœa. The numbers rise rapidly in June, and descend somewhat in July and in the early part of August. This descent has to do with the holidays, but it is noticeable that the ascent begins before the usual period at which the holidays terminate.

If the cases occurring in weeks are plotted out into curves, the curves of individual years diverge widely from the mean. This is chiefly owing to a periodic wave affecting the incidence of Scarlet Fever, which, for the whole City, lasts about six years. Here, again, the periodic wave of individual districts does not coincide with that for the whole City. This wave, both at its highest and lowest part, is liable to obliterate the ordinary annual wave. The rise of the long periodic wave probably corresponds to the extension of the disease due to a growing closeness of the network of susceptible cases, and its decline to the growing separation of the susceptible cases.

To what is the annual wave due? and what is it that produces the rise? To this question no answer can yet be given. The ascent of the curve presents features of resemblance to the ascent of the Enteric curve, and Erysipelas shows similar changes.

Is the annual rise owing to greater facilities of infection as the warm season advances, to changes of susceptibility, to growth outside the body of the specific infection, or perhaps to enhancement of the viability of the infecting organism? No explanation is without great difficulties.

If we consider the cases occurring at the different seasons, we find that there is generally a lowered case fatality in the third quarter, as if a fresh strain were then introduced. But this may be due to the favourable effect of a warm atmosphere on the progress of individual cases.

However it may be with the periodic changes, the mortality from this disease shows a great and almost steady diminution over a long term of years.

The average annual number of deaths per million persons living declined in England and Wales from 759 in 1871-75 to 110 in 1904; in London, from 575 to 80; in Manchester, from 1080 to 150, and the reduction appears to be still in progress. It is doubtful whether there is anything approaching a like reduction in the number of cases. Indeed, the individual cases seem to become slighter and slighter. There is certainly a progressive, though not a steady, change of type going on. Is this due to the notification of Scarlet Fever, and to the precautions taken, or to some other cause or causes?



That it is to be ascribed in part to the notification of the disease must be inferred from the great increase of infection associated with overlooked cases, shown by the figures already given.

Still, the reduction was well in progress before notification became at all general, and we have to seek some other cause. Probably one important cause has been the progressive diminution in filth near dwellings, and especially of excretal filth. If this surmise be correct, the changes now in progress in Manchester should be attended with a still further reduction of Scarlet Fever incidence.

We may diverge here to ask how Scarlet Fever is affected by sex and age? Sex appears to have little influence. As regards age, the maximum incidence covers the age period 3-7 years. The apex is reached at ages 4 and 5. The number of deaths is greatest at age 3. The case fatality is highest in the first year of life, and declines gradually to the age period 10-14. After a slight fluctuation, it then ascends slightly with advancing years. Infants are singularly spared from attack.

These figures will be found useful in discussing return cases.

We may now consider the influence of school life. This problem may be attacked from three different standpoints: the effect of holidays, the effect of absence from school on Saturday and Sunday, and the direct study of the incidence of Scarlet Fever on particular schools, and on particular sections of those schools.

It is from the last-named standpoint that we have approached the subject, and, although Scarlet Fever does spread, and that not infrequently, in schools as a result of the aggregation of the children, a careful consideration of the facts leaves us under the impression that the number of schools in which the spread can be clearly traced to the effect of aggregation in the schools is limited.

Sir Shirley Murphy has analysed the influence of the autumn holiday, and has shown not only that this holiday is accompanied by a depression in the ascending curve of Scarlet Fever, but that this depression is specially associated with diminution of the disease in school children. There are, however, special factors at work at this period which tend to obscure the effect of the holidays, and one is disposed to place more confidence on the daily incidence of Scarlet Fever throughout the year as an index of what absence from school can effect. This method was first adopted by Dr. Whitelegge, while Medical Officer of Health for Nottingham. But it will be generally admitted that these inquiries have been admirably revised and extended by Dr. B. K. Goldsmith in his report published in the *Lancet*, of June 29th, 1907. He there shows that schools do produce an undeniable, though not a large, effect on the production

of Scarlet Fever, and, incidentally, that the most common latent period of Scarlet Fever is two days, and the next most common three days. This excellent piece of work deserves careful attention.

RETURN CASES OF SCARLET FEVER.

Out of every 100 cases discharged from the hospital convalescent from Scarlet Fever, a certain proportion give rise to subsequent cases, which latter are, in general, undoubtedly due to the discharged cases.

That this is the case is shown by the figures relating to these cases for any year. Taking 1894 and 1895 together, we have the following :—

TABLE A.

The intervals between the primary and subsequent eruptions in families from which the primary case had been removed to, but had not returned from, hospital, are given in the following table :—

Interval in days .....	0-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57+
No. of subsequent cases...	265	80	21	14	9	2	4	3	1

TABLE B.

The intervals between the primary and subsequent eruptions when the latter have occurred after contact with the primary case discharged from Hospital are :—

Interval in days .....	41-50	51-60	61-70	71-80	81-90	91+	Total
No. of subsequent cases.	4	11	19	15	6	2	77

If we add up the return cases for a number of years, 1896-1901 and 1903 and 1904, according to the interval between the return home of the discharged case and the eruption in the subsequent cases, we find :—

TABLE C.

Interval in days...	0-7	-14	-21	-31	-41	-51	-61	over 61	Total omitting over 51
	171	180	83	63	27	17	10	11	541



The above figures relate only to cases occurring in the house to which the primary case has been discharged, and include only the first cases traced to the return case.

The above figures, in Tables A and B, show conclusively that the return cases are due, if not entirely, yet mainly, to contact with convalescent cases discharged from the hospital, and that these cases are, therefore, in an infectious state when discharged. Table C also supplies other information. The time which has elapsed after discharge of the primary case before the next case erupts indicates that the period at which the infection attaching to the primary case becomes operative is more or less uncertain, although the infectivity of the patients undergoes gradual decline. It is, however, certainly not always lost until after 51 days, although a great diminution in activity occurs after 31 days. This is a fact of some importance. There is no proof that prolonged detention in hospital diminishes the incidence of return cases, and treatment for a period of eight weeks has been tried in the Monsall Hospital. It is to be remembered that lengthening the period of treatment diminishes the space available—an important consideration.

Now, although the return cases are due mainly to cases discharged from the hospital, this does not prove that their occurrence constitutes a hospital phenomenon, since, if these cases had been treated at home, they might equally have caused return cases after their release from isolation, upon recovery.

It does not appear an adequate way of assessing sources of error to take a number of reported return cases, investigate them, and reject from the number all those which may have owned a different origin, unless this different origin appears a more likely one. The inadequacy of this method is clearly shown by the periods at which subsequent cases occur after discharge of the primary case from hospital.

What one ought to do is to ascertain the number of susceptible persons left among cases treated at home at the end of 42 weeks, and the number of subsequent cases which occurred, say, within 50 days after the removal of isolation. In 1896 there were four such cases, in 1900 two, in 1901 none, in 1903 one, in 1904 four.

Full particulars are given for 1900 and 1901. In these years, among 469 susceptible persons there occurred two cases after recovery, as against 68 return cases at home within 21 days after return of the primary case from a total of 3,767 susceptible persons. We should, therefore, have to multiply the number of cases occurring after recovery in these two years by  $\frac{3767}{469}$  to get the number of recovery cases comparable with the 68 return cases. This gives us for these two years 16 recovery return cases.



To these we might add the number of cases occurring among the 3,767 susceptible persons left after a lapse of 42 days from the commencement of illness in the first case, but before discharge of the primary case. These numbered nine—one in 1900 and eight in 1901. It is, however, better not to make this addition, which represents certainly something other than infection from discharged cases, and yet offers nothing comparable to such occurrence.

The figure which is to be put against the 68 return cases is 16 recovery cases.

There would appear, therefore, to have been in those years a special infective force in cases discharged from the hospital. It is true this conclusion has to be qualified by the consideration that by removal of the primary cases to hospital we have avoided using up a certain amount of the susceptible material left, but the force of the argument is not thereby broken.

In some other years, as shown by the figures already given, the discrepancy between return and recovery cases is not so great, although in the aggregate of a number of years it is clear. The numbers in 1903 are one case beyond 42 days out of 189 susceptible persons, 78 return cases occurring within 21 days out of 1,932 susceptible persons, which gives on the same basis as above 10 recovery against 78 return cases.

Hence, in addition to the infectivity of persons discharged after recovery at home, there is an infectivity derived from aggregation in hospital.

In what does this consist ?

It is probable that patients treated in hospital are more liable than outside cases to Rhinitis and Ear Disease, and it has been suggested that their infectivity after discharge arises from this cause. When, however, we analyse the infecting cases according to their complications at or after discharge, we find no evidence that discharges of this character materially add to the infectiveness of discharged cases. It can scarce be doubted that the infective matter is retained in a living state, and may grow in the nasal meatuses chiefly, without, however, giving rise necessarily to symptoms, and it would appear likely that some degree of exudation is favourable to its continued vitality. It is probable, however, that the infecting matter in these cases is derived largely from contact with other cases, being drawn into the nostrils and collected there in the act of breathing. It may be that this collection of foreign material is responsible for the greater tendency to septic and catarrhal complications in hospital, especially in wards which have been long in use. It appears likely that it is this storage of foreign infection which causes the special hospital effect. Possibly it acts in some measure by irritating the mucous membrane.

From this point of view, it is desirable that every possible means should be taken to dislodge the infective matter before discharge, to oxidise it, and to heal the mucous surfaces. But it appears, in addition, not unimportant to take measures to prevent infection from being thrown off from each case in the ward.

The measures to be taken would, therefore, comprise some routine such as the following :—Treatment of convalescents in a ward apart from acute cases ; daily baths, followed by inunction ; regulated active exercise out of doors ; gentle douching with permanganate of potash solution ; abundance of fresh air admitted into the wards ; careful moist cleansing of the wards. As far as practicable, convalescents, on discharge, should be free from lesions. In every case parents should be cautioned as to the need for keeping the discharged case away from intimate contact with other children for three weeks after their discharge. Such instructions are always given by Dr. Gordon at Monsall Hospital.

A special feature in the histories of these return cases is the closeness of contact which has occurred between the primary discharged case and the return case, and it would seem as if the chain of infection could be broken if they could be kept even slightly apart—not always an easy thing.

Is it possible, under any circumstances, to avert the occurrence of these cases ? The question is not an easy one to answer. But, having regard to the experience of Dr. Rhodes at Baguley Sanatorium, aided, as he is, by having abundance of space, it would appear possible for a medical officer, under favourable conditions, to reduce the occurrence of return cases to such a point that doubt arises as to whether the few cases may not own some other cause.

Taking matters as they stand, is the number of return cases sufficient to render nugatory the influence of the hospital, an influence which can be easily demonstrated, in preventing the occurrence of a large number of cases ? It is shown in the Annual Report for 1901 that the number is, in general, not sufficient to prevent the hospital being credited with a large beneficial influence. It will be greater, of course, in proportion as the number of such cases is diminished.

But it has also been asserted that return cases are more fatal than other cases, and that, consequently, the Fever Hospital tends to maintain a more severe type. On analysis of the deaths, I find that these cases do show a higher case fatality, but that they also occur at a younger age than the average Scarlet Fever cases, to which fact the fatality may almost entirely be ascribed.

Hence the question still before us is that raised in the Annual Report of 1894, by what administrative means we may keep the occurrence of return cases at the lowest possible point ?



If the larger question be considered, by what means, at least expense, we can increase the efficiency of the department in dealing with Scarlet Fever? it is, to my mind, quite clear that this can best be done by the provision of a special staff, selected with all possible care, and trained by the Medical Officer of Health to investigate and deal with Fevers. It is, in fact, scarce possible to rely on statistics relating to infection in Scarlet Fever, or any other disease, unless the enquirer has both training and time. Much, also, can be effected by judicious insistence on measures of isolation.

It would be a source of great satisfaction if it were possible to dispense with the removal to hospital of cases of Scarlet Fever. There can, however, be little doubt that, if this were done, we should have a considerable increase of the disease, especially in poor and crowded households, the more so that in many instances cases would be concealed. There is also little doubt that the type of the disease would be rendered more severe. It does not seem possible to contemplate such action.

On the other hand, it is, for the same reason, not desirable to urge the removal of cases to hospital when isolation is being carried out at home in a suitable manner

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## DIPHTHERIA.

I beg to submit the following particulars regarding cases of Diphtheria and Membranous Croup in Manchester during the year 1907.

The total number of cases notified was 499, a decrease of 52 as compared with the year 1906.

The following table shows the number of cases notified each year for the last 11 years:—

1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
150	196	248	337	457	422	620	474	530	551	499

It will be seen that the number of cases notified increased from 1897 up to 1903, since which year there has been some appearance of diminution.



The disease was most prevalent in the 4th quarter of the year, as seen in Table I.

TABLE I.

DIPHTHERIA, MEMB. CROUP, 1907.—ATTACKS IN WEEKS, ACCORDING TO DATE OF ONSET.

FIRST QUARTER			SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER				
Jan.	5	10	April	6	13	July	6	3	Oct.	5	8
„	12	8	„	13	12	„	13	3	„	12	13
„	19	12	„	20	10	„	20	5	„	19	9
„	26	15	„	27	8	„	27	3	„	26	7
Feb.	2	15	May	4	14	Aug.	3	4	Nov.	2	12
„	9	17	„	11	9	„	10	6	„	9	10
„	16	15	„	18	7	„	17	2	„	16	11
„	23	33	„	25	7	„	24	8	„	23	11
March	2	17	June	1	6	„	31	5	„	30	9
„	9	14	„	8	9	Sept.	7	4	Dec.	7	4
„	16	13	„	15	5	„	14	9	„	14	11
„	23	12	„	22	12	„	21	6	„	21	15
„	30	9	„	29	6	„	28	7	„	28	6
Total...		190	Total...		118	Total...		65	Total...		126

City total, 499.

TABLE II.

SHOWS THE ATTACK RATE PER 1000 LIVING FOR THE YEAR 1907, COMPARED WITH THE MEAN OF FIVE YEARS—DIPHTHERIA AND MEMBRANOUS CROUP.

	1902	1903	1904	1905	1906	Mean	1907
*Twelve Notification Towns ...	1·51	1·20	1·35	1·25	1·71	1·40	1·19
<b>City of Manchester</b> .....	0·77	1·12	0·85	0·90	0·93	0·91	0·78
Manchester Township.....	0·61	0·54	0·59	0·90	0·79	0·69	0·69
North Manchester .....	0·78	1·32	0·95	0·89	1·20	1·03	1·12
South Manchester .....	0·84	1·28	0·91	0·90	0·81	0·95	0·60

\* These are in Lancashire and Yorkshire.

It will be seen that Manchester has a considerably lower rate of incidence than the twelve notification towns specified, and that the attack rate is lower than the average rate for the previous five years.

TABLE III.

DIPHTHERIA, MEMB. CROUP, 1907.—NUMBER OF ATTACKS, OF DEATHS, AND CASE FATALITY AT DIFFERENT AGES, FOR THE THIRTEEN YEARS 1894-1906, AND FOR 1907.

AGES	1894-1906			1907		
	ATTACKS	DEATHS	CASE FATALITY*	ATTACKS	DEATHS	CASE FATALITY*
Under one year ...	155	102	65·8	14	9	64·3
1 to 2 years ...	418	227	54·3	38	22	57·9
2 to 3 „ ...	451	200	44·3	52	21	40·4
3 to 4 „ ...	591	211	35·7	66	15	22·7
4 to 5 „ ...	567	168	29·6	63	10	15·9
5 to 6 „ ...	494	145	29·3	63	10	15·9
6 to 7 „ ...	344	79	23·0	34	5	14·7
7 to 8 „ ...	280	56	20·0	27	2	7·4
8 to 9 „ ...	240	48	20·0	24	2	8·3
9 to 10 „ ...	185	26	14·1	20	4	20·0
10 to 15 „ ...	519	36	6·9	39	1	2·6
15 to 20 „ ...	241	14	5·8	16	...	...
20 to 25 „ ...	214	5	2·3	6	...	...
25 to 35 „ ...	280	12	4·3	25	1	4·0
35 to 45 „ ...	102	4	3·9	9	...	...
45 to 55 „ ...	40	4	10·0	2	...	...
55 to 65 „ ...	11	1	9·1	1	...	...
Over 65 „ ...	6	...	...	...	...	...
All ages .....	5138	1338	26·0	499	102	20·4

\* The percentages in this column are the actual proportions of fatal cases to the attacks at those ages.

From this table it will be seen that, as regards attacks at different ages, the largest number have occurred at ages 3-4 and 4-5. The case fatality per cent., however, is not greatest at these ages, but in the earliest years of life.

In 1907 the case fatality for all ages was 20·4 per cent., an improvement over that for 1906, viz., 21·1 per cent., and the following figures show that there has been a marked improvement in the case fatality during the last 10 years :—

1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
—	—	—	—	—	—	—	—	—	—
28·5	33·9	29·0	28·8	29·4	21·9	20·7	22·4	21·1	20·4

TABLE IV.

DIPHTHERIA AND MEMBRANOUS CROUP, 1907.—ATTACKS IN DISTRICTS, WITH ATTACK RATE, CASE FATALITY PER CENT., AND REMOVALS TO HOSPITAL PER CENT.

DISTRICTS		ATTACKS	ATTACK RATE PER 1000 LIVING	† CASE FATALITY PER CENT.	REMOVALS TO HOSPITAL PER CENT.
Man- chester Township	Ancoats .....	32	0·74	37·5	65·6
	Central .....	23	0·90	17·4	87·0
	St. George's .....	33	0·57	33·3	30·3
North Man- chester	Cheetham .....	58	1·39	6·9	53·4
	Crumpsall .....	10	1·07	20·0	40·0
	Blackley .....	30	3·09	16·7	30·0
	Harpurhey .....	24	1·08	8·3	37·5
	Moston .....	21	1·09	19·0	47·6
	Newton Heath.....	25	0·64	40·0	52·0
	Bradford .....	9	0·36	33·3	77·8
	Beswick .....	14	1·12	21·4	50·0
South Man- chester	Clayton .....	24	1·77	12·5	37·5
	Ardwick .....	28	0·63	25·0	57·1
	Openshaw .....	26	0·90	19·2	34·6
	Gorton (West) .....	17	0·53	29·4	35·3
	Rusholme and Kirk.	38	1·42	13·2	23·7
	Chorlton-on-Medlock	33	0·59	12·1	24·2
	Hulme .....	44	0·69	27·3	38·6
	Moss Side .....	10	0·35	10·0	30·0
City of Manchester		499	0·78	20·4	43·7

† Corrected : the fatal cases are those actually occurring amongst the cases notified.

From this we see that in so far as the three main divisions of Manchester are concerned, the attacks were distributed as under :—

Manchester Township .....	88
North Manchester .....	215
South Manchester .....	196

The attack rate per 1000 living was highest in Blackley, Clayton, Rusholme, Cheetham, Beswick, Moston, Harpurhey, and Crumpsall.



Table V. shows the mortality from Diphtheria and Membranous Croup in Manchester as compared with other parts of the country. It will be seen that the mortality for Manchester City is higher than that for England and Wales generally, and that it is above the mortality figure of the 76 great towns, though below the mean of Manchester for the preceding five years.

The figures for districts outside Manchester, however, are taken from the Annual Summary of the Registrar-General, which shows the mortality in Manchester to be the same as that of London, below that of the 76 great towns, and also below that of England and Wales, a relation not exhibited below, owing to the alterations in the Manchester figures.

TABLE V.

DIPHTHERIA, MEMB. CROUP MORTALITY, 1907.—RATE PER 1000 LIVING  
COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean	1907
England and Wales .....	0·23	0·18	0·17	0·16	0·17	<b>0·18</b>	0·16
76 Great Towns .....	0·26	0·20	0·19	0·16	0·19	<b>0·20</b>	0·17
London .....	0·25	0·16	0·16	0·12	0·15	<b>0·17</b>	0·16
<b>Manchester City</b> .....	0·22	0·25	0·18	*0·22	*0·20	<b>*0·21</b>	*0·18
Manchester Township .....	0·19	0·16	0·13	0·25	0·21	<b>0·19</b>	0·21
North Manchester .....	0·21	0·26	0·22	0·19	0·22	<b>0·22</b>	0·19
South Manchester .....	0·25	0·28	0·17	*0·22	*0·18	<b>*0·22</b>	*0·16
142 Smaller Towns .....	0·24	0·16	0·16	0·15	0·17	<b>0·18</b>	0·15
Rural Districts .....	0·20	0·17	0·14	0·15	0·16	<b>0·16</b>	0·15

\* Exclusive of Moss Side and Withington.

The average incidence rate of Diphtheria on each sanitary district for the years 1897-1906, and the average death-rate are shown in the following table :—

ATTACK RATE PER 1000 LIVING.

	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	10 years 1897-1906	Average Annual Death-rate, 1896-1906
Ancoats.....	0·02	0·09	·27	·27	·33	·58	·29	·66	·96	·62	0·389	0·137
Central .....	0·33	·14	·31	·83	·73	1·09	·70	·29	·89	·91	0·622	0·175
St. George's...	0·30	·31	·34	·15	·68	·39	·66	·68	·87	·86	0·544	0·138
Cheetham ...	0·61	·61	·76	2·84	1·18	1·26	2·01	1·49	1·86	1·95	1·455	0·269
Crumpsall.....	0·52	·30	1·46	2·11	2·37	1·34	2·65	·88	1·19	2·15	1·497	0·267
Blackley .....	0·50	·25	·12	·34	1·35	·44	3·92	·97	·74	1·88	1·051	0·256
Harpurhey ...	0·08	·40	·38	·81	2·08	·83	·84	·64	·40	1·00	0·746	0·200
Moston .....	0·46	2·20	·99	·71	1·15	·23	1·76	·78	·30	·89	0·947	0·232
Newton .....	0·35	1·44	·92	·38	·30	·49	·46	1·04	·73	·81	0·692	0·187
Bradford ...	·17	·13	·76	·69	1·18	·71	·78	·77	·65	·02	0·586	0·199
Beswick .....	·19	·00	·36	·26	1·11	·34	·75	·33	·25	·73	0·432	0·140
Clayton .....	·49	·24	2·51	·26	·97	1·22	·51	·66	·87	1·92	0·965	0·175
Ardwick ...	·21	·29	·31	·17	1·04	·95	1·06	·79	·62	·54	0·598	0·154
Openshaw.....	·06	·13	·09	·45	1·06	·30	·11	·85	1·02	·87	0·500	0·146
Gorton .....	·11	·18	·07	·33	·88	1·20	·79	·62	·42	·41	0·501	0·142
Rusholme .....	·56	·45	·94	·79	·83	1·55	1·92	1·39	1·23	1·48	1·114	0·199
Chorlton .....	·39	·29	·29	·36	·64	·75	·96	·77	1·29	·96	0·690	0·171
Hulme .....	·24	·25	·41	·57	·62	·63	2·18	1·08	·90	·86	0·774	0·206

We thus see that the most severely visited districts are Cheetham, Crumpsall, Blackley, Clayton, Moston, and Harpurhey in North Manchester ; in South Manchester, Rusholme and Hulme.

There are no features common to these districts. Cheetham, Crumpsall, Blackley, and Harpurhey stand high, with a good fall to streams near them. The same may be said of Clayton. Moston stands high, but is flat and damp.

Rusholme and Hulme are low-lying and flat, and Rusholme is inclined to be damp.

The subsoil in Crumpsall, Blackley, Harpurhey, and Moston is sand or gravel ; in Cheetham, mainly clay or marl ; in Rusholme, clay ; and in Hulme, river sand. In Clayton the subsoil is clay.

It cannot be said, therefore, that the incidence of Diphtheria is determined largely by the character of the subsoil, or by retention of moisture.

If individual districts be studied, it will be seen that the incidence on each fluctuates considerably, the maximum of incidence not being coincident in adjoining areas, although there is a general tendency to concomitant variations. The rises which occur in separate districts may last one, two, or several years. The impression produced by a review of the incidences on the Sanitary districts in separate years is that they are produced largely by non-seasonal influences. There is, however, in some of the districts a tendency to persistence, *e.g.*, in Cheetham and Rusholme.

If we turn to the figures for 1891-93, given in the first report issued by the Medical Officer of Health, we find that the order of incidence is quite different. In those years, West Gorton, Openshaw, the Central, Bradford, and Newton take the premier positions, followed by Ardwick, Hulme, Harpurhey, and St. George's.

Cheetham, Crumpsall, Blackley, and Rusholme were, at that period, among the less severely visited districts.

The Manchester Township had an attack-rate as high as that of South Manchester in the earlier period, though then, as now, North Manchester has the highest rate of attack.

Now, there is nothing, that one is aware of, in the circumstances of the inhabitants or of the soil which should have caused such a *bouleversement*. Suggestions which are on the surface are that districts more severely visited at an earlier period have ceased to be so because the presence of the necessary number of infecting centres has failed, because some degree of immunity and a milder type of Diphtheria have been established, or because some cardinal factors, such as the relative number of elementary schools in the respective districts, have changed in the interval.

It is an interesting circumstance that the incidence of Diphtheria is steadily much higher on Salford than on Manchester.

The facts being as I have stated, it is evident that we are in presence of powerful factors with purely local action, the effect of which is variable both in time and in duration. I have endeavoured to study the incidence of Diphtheria in time and place, by plotting out, for separate years 1901, 1902, 1903, and 1906, the number of cases occurring in the different Sanitary districts



month by month. There is thereby shown a tendency of the disease to flare up in some month, at different seasons, with or without any case having been reported in the previous month. Such flare-ups, without any previous case, are very clearly shown in the chart for 1902.

In 1905 and 1906 the disease has considerably extended, and is usually continued from one month to another. Still, the same tendency to sudden increase is shown. In all probability these outbursts are due to overlooked infecting persons with nasal or other discharge highly loaded with Diphtheria bacilli, but, it may be, themselves free from any illness. The effect of such cases is, of course, most serious in a school, especially in the infant department. Of such cases are the nasal post-scarlatinal Diphtherias, usually themselves without symptoms.

We have had, since 1897, in the bacteriological examination of swabs in suspected cases of Diphtheria, the means of arriving at clearer ideas regarding the presence of such sources of infection, and full advantage should be taken of this aid. It would, however, under existing circumstances, be an advantage if some officer from the Public Health Office could take swabs from persons in contact with Diphtheria, and send them to the Bacteriological Laboratory.

It is not new knowledge that such persistently infecting persons exist. This had been clearly made out by the Inspectors of the Local Government Board before the discovery of the bacillus Diphtheria, and the existence of post-scarlatinal Diphtheria was also very well known. The ability of aggregation in school to cause repeated extensions of Diphtheria had been clearly established by Mr. Power, and in one outbreak he showed that this influence was comparable with domestic infection. We may regard it as firmly established that Diphtheria is often spread by slight overlooked cases, that in a certain proportion of instances the bacilli continue to live and flourish after the recovery of the patient, and that persons who have been in contact with cases of the disease may harbour the bacillus—that is, hold it in their throat and nostrils in a viable condition—without themselves suffering. It is evident that these conditions render the spread of Diphtheria in and from school a likely occurrence.

They also emphasise the facts that not only may the school act as a centre of diffusion for Diphtheria, but that the opportunities for combating such spread exist there in a degree which does not hold elsewhere.

It is, thus, desirable that the facts relating to Diphtheria should be examined with special reference to school life.

If we take the age periods 0 to  $4\frac{1}{2}$ ,  $4\frac{1}{2}$  to 14, and 15 and upwards, we shall obtain groups which roughly correspond with the children not yet at school, children at school, and persons who have left school. Cases at age 4 are divided

evenly between the two groups. We thus get the notified cases of Diphtheria arranged thus:—

Ages	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906
0-4½.....	54	69	94	149	157	167	215	165	194	211
4½-14.....	55	88	111	151	237	202	324	244	266	277
15 and upwards..	41	39	43	37	63	53	81	65	70	65

From this table we see that as Diphtheria increases from 1897 onwards, the numbers increase in 1898 and 1899 simultaneously in school and younger children, more rapidly, however, for the former than the latter. In 1900, however, the number among the younger children undergoes a greater increase than among school children. A further great increase occurs in 1901, this time almost entirely among school children, though slight increase is manifest among younger children. Hitherto, no increase has been manifest in persons of 15 and upwards. These now increase. In 1902 a diminution occurs in school children, with slight increase in younger children. Older cases decrease. In 1903 a great increase occurs in school children, accompanied by marked increases in the younger children and older persons.

From these figures we derive the impression that the fluctuations in the number of school children attacked largely determine the numbers in the two other age groups, older persons, however, reacting much less readily than younger children.

This is, however, not the same thing as saying that the spread of Diphtheria in the schools determines the extension of the disease amongst those not at school, since it may be that 5-14 is the most susceptible age period, or, at least, the period at which children most readily infect each other. As against this, we have the large numbers attacked at ages 3 and 4. In any case, we cannot affirm that infection occurs as a consequence of attendance at school, at school ages, on the strength of these figures.

If we take the numbers occurring at each year of age, we find that there is a tendency, as the disease rises, for cases at age 4 to be more numerous than those at age 3, and for cases at age 5 to overtake the cases at age 4.

These facts agree with Sir Shirley Murphy's deduction, from a study of the death-rates in age periods at successive epochs, that, as Diphtheria increases, school influence comes more into play. This, again, is quite another thing from affirming that school influence causes the increase.



The following table, which permits of a study—for 11 years 1896-1906—of the death-rates from Diphtheria in the three main divisions of the City at all ages, and at the ages 0-4, 5-13, and 15 and upwards, shows that the comparatively low death-rate in the Manchester Township at this period is due entirely to the low mortality at school ages.

POPULATIONS, DEATHS, AND MEAN DEATH-RATES IN GROUPS OF AGES FOR THE CITY OF MANCHESTER, AND EACH OF ITS MAIN DIVISIONS FROM DIPHTHERIA IN THE ELEVEN YEARS 1896-1906 :—

	0 — 4			5 — 14			15 +			Total		
	Census Popula- tion	Aver- age Deaths 1896- 1906	Death Rate	Census Popula- tion	Aver- age Deaths 1896- 1906	Death Rate	Census Popula- tion	Aver- age Deaths 1896- 1906	Death Rate	Census Popula- tion	Aver- age Deaths 1896- 1906	Death Rate
Manchester Township	15,956	16	1'0028	27,581	4	0'1450	92,018	1	0'0109	135,555	21	0'1549
Northern ...	20,027	23	1'1484	35,111	12	0'3418	106,994	1	0'0093	162,132	36	0'2223
Southern ...	28,159	28	0'9944	49,186	13	0'2643	170,260	2	0'0117	247,605	43	0'1737
City .....	64,142	67	1'0446	111,878	29	0'2592	369,272	3	0'0081	545,292	99	0'1816



At ages 0-4 the death-rate is higher in the Manchester Township than that in South Manchester. At ages above 15 it is higher than that in North Manchester. At ages 5-14, however, it is conspicuously low.

It may be confidently assumed that in this very poor district the incidence has been, by comparison, even lower.

Why the schools in this part of Manchester should have escaped from severe incidence, as they have done, is somewhat difficult to understand. I have suggested that their escape is due to a process of immunisation from the spread of a bacillus of comparatively low virulence, which, without causing appreciable illness, is able to manufacture an amount of antitoxin in the system sufficient to repel infection. This suggestion is supported by some German observations, on a limited scale, on the presence of antitoxin in the systems of about half the children examined, though antitoxin was found to be present in a higher percentage of older persons.

We may, however, get somewhat nearer to the heart of the problem, what part do schools play in propagating Diphtheria? From the sheets relating to particular cases of Diphtheria we are able to ascertain the schools attended by each scholar who has contracted Diphtheria. There were in Manchester, in 1907, 177 elementary schools; and Dr. Goldsmith tabulated for me the incidence for 10 years, 1897-1906, in these schools. The number of scholars was over 100,000.

In the majority of schools, many of them large, no case of Diphtheria had occurred for 10 years; in others, only odd cases. In others again, the disease appeared to persist with a low degree of intensity, breaking out into a flare-up from time to time. In others, flare-ups of very limited duration occurred without apparent antecedents. In all such cases we may almost confidently assume the presence of some case or cases of the persistently infective type.

The number of such outbursts in the 10 years was 33—five without previous persistence, 28 in the course of a steady persistence.

On next page I give a few cases illustrative of the mode of these occurrences.



The following will serve to show the mode of persistence in schools, without the occurrence of anything in the nature of a flare-up:—

NAME OF SCHOOL	1897				1898				1899				1900				1901			
	I	2	3	4	I	2	3	4	I	2	3	4	I	2	3	4	I	2	3	4
Grange Street .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	I	I	..	..
Varna Street .....	..	..	..	..	..	..	..	I	..	..	..	..	I	I	..	..	I	I	5	..
St. Stephen's .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	I	I	..
Ducie Avenue .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	I

NAME OF SCHOOL	1902				1903				1904				1905				1906			
	I	2	3	4	I	2	3	4	I	2	3	4	I	2	3	4	I	2	3	4
Grange Street .....	..	..	..	2	I	I	2	..	..	..	..	2	I	..	..	..	..	I	..	I
Varna Street .....	..	..	..	..	..	..	..	..	2	I	I	..	..	..	2	..	..	I	..	2
St. Stephen's .....	..	..	I	..	..	..	4	I	..	..	..	I	2	..	I	..	..	I	..	I
Ducie Avenue .....	..	..	I	..	..	..	..	..	I	..	..	2	I	..	3	4	I	I	..	4



In these 33 instances, and in these alone, does the influence of aggregation in school, or of school life, come clearly into view. We cannot affirm positively of the continued low persistence in a school that it is due to aggregation in the school, or to the persistence of infection in the school building. It may, or it may not be. It may be due to repeated introductions through infection sustained outside the school. The flare-ups which I have mentioned and illustrated, however, are due to school life, and are intimately connected with it.

If we have regard to the number of cases thus occurring, we can affirm that aggregation in elementary schools plays a distinct, though a moderate, part in the propagation of Diphtheria. It may play a much larger part than these facts warrant us in asserting. But this much we can, with confidence, assert.

#### ANALYSIS OF A YEAR'S DIPHTHERIA.

The above table involved much labour, although the results have been given in so small a compass. Scarcely less is involved in the careful analysis of a year's Diphtheria. The cases occurring in 1901, a year taken at random, have been carefully examined, with a view to see whether they would yield any further information.

They have been divided into cases 0-4 years of age, cases 5-14, and cases of 15 years of age and upwards :—

##### I.—Cases of age 0-4 years.

These number 154. Out of the 154, 29 attended school, four out of 53 cases at age 3, and 25 out of 54 cases at age 4. These 154 cases may be classified thus :—

##### Group I.

Those attending schools or belonging to families some member of which attended a school, which had been invaded by Diphtheria within a month prior to the occurrence of the case in question, the invasion not having been constituted by a case in the same family.

	+	—	o	Total
Number .....	43	12	4	59
Number traced to previous cases.....	18	3	1	22

Taking out the children themselves attending school, we get the following figures :—

	+	—	o	Total
Number .....	27	9	1	37
Number traced.....	14	2	0	16

Of the 16 traced, 11 were infected by children attending school.

Group 2.

Cases in which there are children in the family, other than the case here considered, attending an elementary school which had not been invaded by Diphtheria within a month of the occurrence of the case under consideration :—

	+		—		o		Total
Number .....	26	....	14	....	14	....	54
Number traced.....	4	....	3	....	4	....	11

This presents a different picture from Group 1, and the difference is greater than the numbers show.

Out of the four positive cases traced, two are due to previous attacks in the same family of children attending school, and one is a return Scarlet Fever case. Of the three negative cases traced, one is a return Scarlet Fever, and the same is true for one of the three cases in which no swab was taken.

Group 3.

Cases in which no child in the family, other than, it may be, the case attacked, attends an elementary school :—

	+		—		o		Total
Number .....	25	....	8	....	15	....	48
Number traced .....	3	....	2	....	2	....	7

Here, again, one of the negative infections is a return case. But the most interesting part of this group is the fact that two cases—(one + and one —) were apparently due to the mother, in each case, having visited a case of Diphtheria without herself suffering.

To complete the tale, in addition to the above, two cases contracted the disease in a hospital which had been previously invaded by Diphtheria, either owing to the presence of a harbouring case or, less likely, to persistence of infection in the wards.

Altogether there were four cases which may be called return cases—three who appeared to contract the disease from discharged Scarlet Fever patients, and one who himself developed the disease after discharge.

The facts regarding the 40 cases traced to known sources may be thus stated : traced to previous cases attending school, 18 ; to other sources, 22.

*Discussion of the influence of harbouring cases.*

The question of the influence of harbouring cases in producing infection is one of much importance, though we are not yet in a position fully to discuss it. In my own experience I have known three instances in which Diphtheria may have been carried to others by persons not themselves suffering.

We must not conclude from the meagre character of the evidence given so far that this does not occur to any extent. The number of cases arising in connection with discharges from Scarlet Fever and Diphtheria wards is sufficient to show that this influence is a real one. In regard to Scarlet Fever, it is very plain. But, if harbourers can effect much harm, we should expect to see Diphtheria arising in schools attended by scholars who come from a family in which there has been a case of Diphtheria, but who have not themselves been attacked. This may have happened in 10 instances out of the 154 cases recorded, or, subtracting the cases in which no other member of the family attends school, in 10 out of 106 instances, the period of such conveyance being fixed at one month.

This certainly seems a small proportion, the more so that slight attacks must be mixed up with harbourers pure and simple. On the other hand, there were 37 instances in the first 10 months of 1901 of Diphtheria in children under 5 who had brothers or sisters attending schools not previously invaded, to the number of 42. Diphtheria appeared *within two months* in these schools in 11 instances, which is, at least, double the normal proportion. The number of contacts was 64.

We contrast this with the 21 cases in which the disease may have been carried home by harbourers from school to younger children (see Group 1).

On reflection, this will not appear an unreasonable relation. A case occurring in school is capable of producing more harbourers than a case occurring at home, and the number of school children attacked exceeds the number of attacks in children under school age.

Harbourers, therefore, may have the power of producing a limited number of decided attacks, but their influence on the total numbers occurring is probably not great.

We may sum up the considerations regarding the infection of the 154 cases thus: 18 are traced to previous attacks in school children, and 22 to other sources, of which last, two were apparently due to harbourers.



In addition, there were 28 cases who either attended themselves or belonged to families containing other children attending schools which had been invaded by Diphtheria within one month, who might have been infected by harbourers.

In the majority of the cases school life was not, apparently, responsible for the attack directly or indirectly. Yet we must bear in mind that children from 2 to 5 years of age will often play, outside school hours, with school children, and that it is the custom for older girls to gather round and fondle young children. Making every allowance, however, we may conclude that in all probability the spread of Diphtheria in Manchester children under 5 years of age was, in 1901, for the most part, not associated with school life.

## II.

The remaining cases will be divided into four groups :—

A—Children age 5–14 attending a school invaded otherwise than through the family under consideration within one month prior to the attack.

B—Children age 5–14 attending a school not invaded within one month prior to the attack.

C—Children age 5–14 not attending school.

D—Persons of 15 and upwards not attending school.

Teachers would be placed under D.

### *Group A.*

Examination of swabs at the beginning of illness gave :—

+	—	None taken	Total
39	12	18	69

*History of infection, etc.*—22 cases were infected at home (one from a child under 5, 20 from children at school aged 5 to 14, one from a person over 14), and one case was infected outside.

Of the above 23 cases, one was infected by a teacher, and one appeared to be infected by a child who died of Pneumonia.

Another case, not included above, followed an attack of Pneumonia in a brother. Total infections traced, 24.

One case had sore throat for five weeks before Diphtheria became pronounced.

We note in the above the high proportion infected from previous attacks in school children.

*Group B.*

	+	—	None taken	Total
Examination of swabs				
gave .....	72	25	15	112

From previous cases at home there were infected 15 cases—five from children under 5, four from children attending school, and six from persons above 14 years of age. Three of the last six, however, were due to a girl who acted as servant to a private non-infected school.

Two cases were infected by persons outside the home, two were apparently due to playing with cases of Scarlet Fever after their discharge from hospital, and one to a discharged case of Diphtheria.

Total traced, 20.

In one instance, six children from an infected house attended school, which was not, however, invaded.

In another instance the mother had recently suffered from Pleurisy. Two cases of apparent persistence were noted. Case 118 was removed to hospital with Diphtheria in October, 1899, and (March, 1901) has since suffered from foetor of the breath. Another had Diphtheria in February, 1899.

*Group C.*

	+	—	None taken	Total
Swabs .....	7	3	5	15

Five were traced to previous attacks at home, three of which were in school children, two in older persons. In addition, one case is stated to have been infected by the brother, whose card is missing. Total, six traced.

Case 166 had Croup 12 months ago, and has remained ill.

*Group D.*

	+	—	None taken	Total
Swabs .....	28	16	11	55

Thirteen are traced to previous attacks at home, four to children under 5, six to school children, and three to older persons.

In addition, two are traced to neighbours and four to institutions. Total traced, 19. The following cases are not included above:—

Case 75, a lodger, has influenza. Case 123, a friend (æt. 21), who slept with this case, has had sore throat for 12 months. Case 191, a teacher, got cold walking in the Whitsuntide procession, and developed Diphtheria; probably contracted her illness from school children. Case 333 had nursed her son, who died of Gastric Catarrh.

We note the seemingly increased power of infectiveness of children attacked with Diphtheria in a school recently invaded by the disease.

Recurring to children under 5, we observe that of 37 cases whose brothers and sisters attended such a school, 11 owed their attacks to older members attending school. Of children over 5, we observe that out of 68 who were attacked while attending an invaded school, no fewer than 20 owed their attacks to other children attending the same schools.

The children attacked while attending an invaded school appear, therefore, to have an exceptional power of propagating the disease.

Two hundred and nine school children attacked caused 21 cases out of 140 not attending school, while among the 209 attending school, only six were shown to be caused by the 140 not attending school.

This, again, may be due, in some measure, to immunity produced among school children, more especially in invaded schools.

Attention is drawn to the few cases in which the disease is associated with previous chest disease in another person. These only number three—two are associated with previous attacks of Influenza, and one with previous Gastric Catarrh. In the absence of explanation of so many of the attacks, it is suggested that more inquiry should be directed to such previous illnesses.

Persistence is noted in several cases.

From the above analysis we see that school life not only causes an increase of Diphtheria, but occasions a not inconsiderable number of attacks in younger children, and that school children are, though to a less extent, affected by attacks at younger ages. The relation of school life to attacks in older persons does not appear to be a close one. This is in accordance with the facts of the table on page 5.

What are the circumstances in school life which give to it exceptional power to propagate Diphtheria ?

1. Age. Attendance on an infant class is an important factor. The introduction of a number of fresh and unprotected children is another. It is probable that in invaded schools children undergo a process of immunisation. Hence the rapid drop in the numbers attacked from age 5 to age 6, and onwards.

2. Crowding in school, no doubt, is an important influence.

3. Having regard to the increase in numbers since the abolition of slates, it is doubtful how far the use of slates is material.

4. Common water-taps and aggregation in closets has probably some effect.

5. Having regard to the large number of children under school age infected by school children, it is probable that the scramble of play is the most serious



cause of spread. Such scrambling has been known to cause rapid and extensive spread, and it is eminently calculated to favour transmission from nasal diphtheritic discharges.

6. The use of common basins, common towels, and exchange of handkerchiefs is also likely to favour spread.

It may be that the limitation of spread in the central schools is due partly to deficiency of washing conveniences and to the absence of playgrounds, though one would not be understood to found on this any argument against either one or the other. As we have seen, too, there is reason to think that the lesser incidence on the central schools may be due to change in type of the disease.

In considering what action is indicated by the facts which we have at present in reference to Diphtheria, we must try to indicate what is essential and what is not essential.

As we have seen, in the majority of the schools Diphtheria has not made its appearance at all within 10 years, and only in a comparatively small number has it taken on epidemic features. Even then it speedily dies down, alike whether active steps are taken to ascertain all infective cases or whether they are not. Only in three of the above schools were steps taken to discover contacts who harboured the bacillus, and isolate them at home.

In two of these the outbreaks ceased, and in one it gradually died down.

We have not, so far, seen our way to change the customary procedure in regard to cases of Diphtheria. The difficulty is largely one of expense.

No doubt, what should be done in each case is to take swabs from all persons who have been in contact with a case of Diphtheria at home, and to isolate such persons as are found to harbour bacilli. But the medical practitioner is paid 2s. 6d. for each swab which he takes, and it is evident that such control would cost a large sum. The difficulty might be overcome by getting a special officer to take swabs.

But, in the first place, medical practitioners would object to any officer taking the swabs at the home who was not a medical man, and many would object to such a procedure on the part of even a medical officer. Clearly, therefore, every case of Diphtheria ascertained should be promptly removed to hospital, and in that case the patient would not be sent back to school until at least two negative swabs had been found. But this course ought, also, to be followed for all cases of Diphtheria which have been treated at home.

Similarly, when two cases of Diphtheria have occurred in any department of a school within a period of four weeks, all suspicious cases should be swabbed; and if three or four cases have occurred, the whole of the department should be swabbed, children shown to harbour bacilli being sent home.

# 1907.—DIPHTHERIA AND MEMBRANOUS CROUP.

IN THIS TABLE ARE INCLUDED ALL CASES, EXCEPT THOSE DIAGNOSED AT MONSALL AS NOT DIPHTHERIA.

STATISTICAL DIVISIONS		January	February	March	April	May	June	July	August	September	October	November	December
Ancoats.....	{ +	•••••	•••••••	••	•	•	•	...	•	•	•••	...	...
	{ † o	...	† o o	†	o o	...	†	...	...	...	o o	† o	o
Central .....	{ +	••	•	•	•••	•••	•	...	••	••	••	...	...
	{ † o	o	...	o	...	...	†	†	...	o	...	...	...
St. George's .....	{ +	••	•••	•	•••	...	...	...	...	••	•	•••	••
	{ † o	...	†	††	††	††	† o	†	...	o	† o o	††	o
Cheetham.....	{ +	•••••	••••••	•••	••	•••	•••	•	•••	...	•	••••	••
	{ † o	†	†††††	†	††††† o	...	...	†	†	†	†††	† o	†† o
Crumpsall...	{ +	••	•	•	•	...	...	...	...	...	...	...	...
	{ † o	...	†	†	†	o	...	...	...	† o	...	...	...
Blackley .....	{ +	•••	•••••••	•••••	••	••	•	...	•	...	•	...	•
	{ † o	o	†	††	...	...	...	...	††	†	†	...	†
Harpurhey .....	{ +	...	••	••	••	...	••••	•	•	...	•	•	••
	{ † o	...	...	†	...	†	††	...	†	†	...	...	†
Moston .....	{ +	•••	•	•	••	•	...	...	...	••	...	•	...
	{ † o	†	o	†	† o	†	...	...	...	†	† o	†	...
Newton.....	{ +	•	••	•••	...	...	••••	...	...	•	...	•	•
	{ † o	o	o o o o	†	...	†	†	o	...	o	o	...	...
Bradford .....	{ +	...	•	•	...	...	...	...	•	...	...	••	...
	{ † o	o	o	...	...	...	...	...	...	...	†	†	...
Beswick .....	{ +	...	•	•	...	•	...	...	...	...	...	...	•
	{ † o	†	o	o	†	†† o	o	...	...	o	...	...	††
Clayton.....	{ +	•••••	•••••	...	••	•	...	...	...	...	...	•	...
	{ † o	† o	...	...	††	...	†	o	...	...	...	...	†
Ardwick .....	{ +	...	...	•••	•	•	...	...	...	•	••	...	••••
	{ † o	†	† o o	†††	o	...	...	...	o	††	...	††	†† o
Openshaw.....	{ +	•••	••••	••	•	•	...	...	...	•	...	••	•
	{ † o	†	o	...	†† o o	...	...	...	...	o	† o	...	...
West Gorton.....	{ +	...	••	•	...	••	•	•	...	...	•	...	•
	{ † o	o	††	†	...	...	†	...	...	†	o	...	o
Rusholme and Kirkmanshulme.....	{ +	••	•	••	...	•	•••••	••	••	...	•••	••	•
	{ † o	...	††	††	†††	o	...	† o	o	...	††	†††††	...
Chorlton-upon-Medlock.....	{ +	...	••••	••	•	...	...	...	...	•	••	•••	•
	{ † o	...	††† o	†† o o	††	...	†	...	...	...	†	† o o	†
Hulme .....	{ +	•	•	••	...	••	•	••	•••••	•••	•••	...	•••
	{ † o	† o o	o	o o	o	† o	†††	†	†	...	†† o	††††	...
Moss Side.....	{ +	...	•	•	...	...	•	...	...	...	...	•	•
	{ † o	o	†	...	...	††	...	...	...	...	†	...	...

Bacteriological result.

• Positive.

† Negative.

o None taken.





Naturally this throws a good deal of work on the school medical officer, and entails a considerable amount of expense for the examination of swabs.

By such procedures, carefully carried out, swabs being taken from both the throat and nose, it should be possible to discover and remove all infecting cases (harbourers).

In such cases, moreover, a comparatively small dose of antitoxin suffices to prevent the development of Diphtheria.

In New York, schools and families are visited by members of the Public Health Staff, and antitoxin is in many cases administered freely to contacts by way of preventing development of the disease. This procedure does not, however, get rid of bacilli from harbouring cases, although probably it is entirely successful so far as the school is concerned.

Although, however, it is desirable to extend the precautions which are at present being taken, much may be done without increased recourse to bacteriological aid.

Thus, at the home, periodic examinations should be made of the throat and nose of all other members of the household. Antitoxin should be administered by the medical practitioner in all cases in which he suspects an attack of Diphtheria, without waiting for bacteriological examination, and persons found harbouring bacilli should be isolated, as far as practicable, antitoxin being administered to those whom it is not found practicable to isolate. Antitoxin is supplied to every Police Station in the City.

All cases of Diphtheria and Membranous Croup should be removed to hospital as soon as possible.

If a case of Diphtheria is nursed at home, unless two negative swabs have been taken, the patient, if a child, should, up to the end of four weeks after recovery, or, say, two months from the onset, refrain from intimate play or intimate contact with other children, and be kept away from school.

As far as practicable, school children should have, at school, separate writing materials and separate books, and should not use a common towel.

On the occurrence of Diphtheria in a department, the rest of the department should be examined, and suspicious cases sent home; the more stringent procedures as regards bacteriological examination of children being reserved for those instances in which the disease appears to be spreading in the department.

Practitioners, also, should remember that, if they have reason to suspect Diphtheria, they must hold to their convictions whether the bacteriological swab does or does not yield a positive result.

The distribution of Diphtheria for 1907 is shown on the spot chart.

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## ENTERIC FEVER.

### PART I.

The study of this disease is of considerable importance. It is one of a group of affections, the infective material of which is discharged by the bowels. It has this feature, that the great majority of known cases are adults, and, as the illness is of considerable duration, the loss of employment becomes a serious matter. The loss of life is also considerable. It is, therefore, deserving of careful and prolonged study, the more so that it is liable to occur in severe outbursts when the water or milk supply are contaminated, as happens from time to time, now in one place, now in another.

The facts have, therefore, been subjected to analysis year by year. There is, perhaps, no disease which presents more baffling elements, arising, no doubt, in part, from our ignorance of the various sources of infection, and of the life history of the bacillus both within and without the body. It is, thus, requisite to give our attention to the facts available, and to look at them from every point of view, so as to see whether we can obtain any guidance as to the unknown factors involved.

It has been generally assumed that it is very much more difficult to arrive at a knowledge of the mode of propagation of Enteric Fever in a large town than in a rural district, and, no doubt, in some ways, this is the case.

If, however, it were possible to have every case investigated by an intelligent enquirer familiar with all the facts so far ascertained, the obscurity would certainly disappear.

Such an inquiry, unfortunately, requires a great deal of time, and would demand in the last half of the year the undivided attention of one man. It would be well worth doing for a few years, but in the press of matters relating to the Public Health it does not get done. This is, unfortunately, particularly the case as regards the later weeks of August and the earlier weeks of September, when the work of the Public Health Office is, of necessity, disorganised by the holidays.

This, the most promising line of inquiry, has, therefore, not been so far available to an adequate extent. The District Sanitary Inspector's inquiries for a purpose of this kind are almost valueless, since the whole relation of the cases to each other, and to environment, has been found to be altered by a partial investigation into the history of individual cases, and that in proportion as it has been found possible to give the necessary fulness of investigation to such cases.

On the other hand, a great advance was made when, in 1897, cases of Enteric Fever notified to the Public Health Office were submitted systematically to the serum test. Precision has, thus, been given to the number of cases studied in different associations and under different conditions.

The facts thus rendered available may be presented in the following manner :—

TABLE I.

INCIDENCE OF AND DEATH-RATE FROM ENTERIC FEVER IN MANCHESTER.  
*Number of notified cases, deaths, and death-rates per 1000 living from Enteric Fever in each of eleven successive years.*

YEAR	1897	1898	1899	1900	1901	1902
No. of cases notified . . . .	503	642	381	378	359	378
No. of deaths . . . . .	95	120	73	75	75	66
Death-rate—Manchester..	0·18	0·22	0·13	0·14	0·14	0·12
Death-rate—England and Wales . . . . .	0·16	0·18	0·20	0·17	0·16	0·13

YEAR	1903	1904	1905	1906	1907	
No. of cases notified . . . .	387	325	345	384	265	
No. of deaths . . . . .	93	66	55	83	37	
Death-rate—Manchester..	0·17	0·12	0·09	0·14	0·06	
Death-rate—England and Wales . . . . .	0·10	0·09	0·09	0·09	0·07	

The death-rate for Manchester in five yearly periods has been :—1886–90, 0·30 ; 1891–95, 0·24 ; 1896–1900, 0·18 ; 1901–05, 0·13.



The reduction in the death-rate has thus been continuous and marked. It is scarce to be anticipated that, even under the most favourable conditions, it will continue to be so rapid as is shown in the above figures. The number of cases has not diminished so rapidly as the death-rate, a fact to be ascribed partly to the less severe type of the disease, partly also, however, to the increased effort expended in looking for overlooked cases in recent years, with the result that the number of cases thus increased has not been attended with corresponding increase in the number of deaths.

If the death-rate from Enteric Fever in Manchester be compared with that for a number of northern towns, it is found to be steadily lower. It is, however, as a rule, above that of the country generally, and still more above that of London, though not invariably.

#### INCIDENCE OF THE DISEASE ACCORDING TO LOCALITY.

In Table 3, page 103, giving the facts for the year 1907, will be found the mean rates of incidence per 1000 living for the nine years 1897 to 1904, reckoned on the populations of the districts in 1901.

The attack-rate is highest in the Manchester Township, and next highest in North Manchester.

Yet the highest rates in individual districts are not found in the Manchester Township, but occur, in order of magnitude, in Bradford, North Manchester; West Gorton and Openshaw, South Manchester; Clayton, Beswick, Newton, and Harpurhey, in North Manchester. Harpurhey stands at the same figure as St. George's in the Manchester Township, which, in recent years, has been severely visited. These districts of excess incidence are, with the exception of Beswick, distinguished by the presence of a high proportion of midden-privies. There are also other circumstances. Beswick contains the Holt Town Cleansing Works. Clayton contains a large tip. Newton is between tips in Clayton and Harpurhey. Harpurhey contains a tip, and also a depot of the Cleansing Department. Bradford is between the Holt Town Works and the Clayton tip. These sources of flies, however, do not attach to West Gorton and Openshaw, and it is probable that the midden-privies are here the most important factor.

The incidences in 1907 depart greatly from the above order, but it is not possible to draw satisfactory inferences from the history of one year.

DISTRIBUTION OF THE DISEASE ACCORDING TO AGE.

The distribution of attacks and deaths according to age will be seen from the following table, taken from the Annual Report of the Medical Officer of Health for 1906, relating to the 10 years 1897-1906 :—

AGES	ATTACKS	DEATHS	CASE FATALITY PER CENT.
Under one year .....	8	2	25·0
1 to 2 years .....	31	6	19·4
2 to 3 „ .....	57	6	10·5
3 to 4 „ .....	81	10	12·4
4 to 5 „ .....	103	10	9·7
5 to 6 „ .....	122	14	11·5
6 to 7 „ .....	116	11	9·5
7 to 8 „ .....	114	9	7·9
8 to 9 „ .....	137	13	9·5
9 to 10 „ .....	114	10	8·8
10 to 14 „ .....	713	81	11·4
15 to 19 „ .....	827	160	19·4
20 to 24 „ .....	842	176	20·9
25 to 34 „ .....	1099	244	22·2
35 to 44 „ .....	498	140	28·1
45 to 54 „ .....	217	67	30·9
55 to 64 „ .....	65	29	44·6
65 and over .....	20	10	50·0

The incidence of the disease is seen to be comparatively slight on the early years of childhood, and to increase with advancing years, until it attains its maximum at the age periods 15 to 19 and 20 to 24. This might be taken to mean that young children are less susceptible to Enteric Fever than adults. It is doubtful, however, whether these figures represent the true state of the case.

Careful inquiry into the etiology of Enteric Fever brings to light a large number of overlooked cases, of whom a disproportionately large section are young children, and it is probable that a very great number of attacks in young children are overlooked.

The irregularity of the case mortality, and the high death-rate in the first two years of life seems to point also in this direction. It appears possible, also,

that the high incidence at ages 15 to 24 is due in part to the kind of food taken by persons at these ages.

The case mortality diminishes until, somewhere about the age 8 to 9, it attains a minimum, after which it again gradually rises. The disease is most formidable to young adults, the maximum incidence being on ages 20 to 24, from which age it declines slowly downwards to the age of four, and upwards rapidly with increasing years.

#### INCIDENCE ACCORDING TO SEX.

Males suffer more than females. From analysis of the cases for 1905 we find that male workers suffer more than female workers, female workers than females at home, and all these more than children. If we assume with Curschmann that males suffer most because of their more numerous opportunities of infection, there appears to be no reason why male workers should suffer more than female until we remember that shell-fish cause considerably more Enteric Fever among males than among females. There may also be other reasons, such as the habits of males in respect of the consumption of alcohol.

If, now, we refer to the Annual Report for 1904, we find that for the five years 1900 to 1904 the percentages of persons attacked by fever at different periods of life and under different social conditions were for the year 1904 :—

Occupied males, 14 and upwards	...	..	44·20 per cent.
Occupied females	„	.. ..	14·73 „
Unoccupied females 14 +	.. ..	.. ..	16·93 „
Children under 14	.. ..	.. ..	24·14 „

Now, occupied persons of 14 and upwards were at the census nearly equal in number to children under 14 + unoccupied females of 14 and upwards. Yet the first two classes had 58·93 per cent. of the cases, the last two only 41·07 per cent. It will be evident that occupied persons suffered far more severely than unoccupied, and on further examination it is found that occupied males suffer more than occupied females.

The relation of workers to others is an invariable one, in every year, and in every quarter of every year, as will be seen by referring to the Annual Report for 1904, pages 136 and 137. This relationship is susceptible of the gloss that the workers are at more favourable ages than the others, although the difference of incidence on male and female workers would not be thus explained. Whether this is the complete explanation or not, it is certain that careful inquiry into individual cases brings to light a large number of overlooked attacks in children. It is necessary to remember that the different incidences according to age and sex may be susceptible of explanation apart from age and sex susceptibility.



These figures, however, have been revised with special reference to the annual course of the disease, and the extensions will now be given in an amended form.

If at any period in the summer or autumn there is some alteration in the mode of infection, so that, for example, it is in a higher measure due to infection from the soil or from contamination of food by flies, or if it were in a greater measure communicated by fruit, such an alteration ought to be reflected in a higher proportion of children to workers known to be attacked during the period in question. In the Annual Report for 1904, therefore, cases were classified in quarters according as they were children from 0 to 14, workers of 15 and upwards, or women at home of 15 and upwards. The indications thus obtained were not constant from year to year. The average of five years gave :—

AVERAGE OF THE PERCENTAGES FOR FIVE YEARS OF WORKERS, WOMEN AT HOME OVER 14, AND CHILDREN AT AGES 0 TO 14.

	1st quarter	2nd quarter	3rd quarter	4th quarter
Workers over 14 ..	62·4	65·4	60·5	56·9
Females at home over 14	14·3	15·5	16·3	18·3
Children 0 to 14 ..	22·4	19·1	23·2	24·8

Thus, in those five years, the percentage of women at home and children were both highest in the fourth quarter, next highest in the third quarter, and lowest, so far as the women at home are concerned, in the first ; in the case of the children in the second quarter.

Supposing this relation to continue to hold on larger figures and over an extended period, it would appear to point to some influence in the soil, or attached to the neighbourhood of houses, which was most intense, or to sources of infection which were most abundant near houses in the fourth quarter. For example, infected privies would be such an influence.

The following figures show the distribution of cases in the period immediately preceding the autumnal rise, during the first part of the rise, and during the second part of the rise.

They offer, however, no clear indication except that for the whole of this period there is a relative increase in children.

## ENTERIC FEVER—CLASSIFIED ACCORDING TO OCCUPATION, AGE, AND SEX.

	Children under 14 years	Males 14 years +	Females—14 years +	
			Workers	Home
1898—July 3rd to July 23rd .....	1	4	2	4
„ July 24th to Sept. 17th .....	21	40	9	13
„ Sept. 18th to Oct. 15th .....	18	46	16	22
1899—July 2nd to July 22nd .....	2	..	1	1
„ July 23rd to Sept. 16th .....	12	31	21	12
„ Sept. 17th to Oct. 14th .....	10	21	6	6
1900—July 1st to July 21st ....	1	1	1	1
„ July 22nd to Sept. 15th .....	17	42	6	9
„ Sept. 16th to Oct. 13th .....	12	25	10	9
1901—June 30th to July 20th .....	1	3	3	—
„ July 21st to Sept. 14th .....	30	47	12	21
„ Sept. 15th to Oct. 12th .....	19	38	8	10
1902—June 29th to July 19th .....	1	8	3	3
„ July 20th to Sept. 13th .....	12	28	8	9
„ Sept. 14th to Oct. 11th .....	17	18	14	11
1903—July 5th to July 25th .....	1	12	1	3
„ July 26th to Sept. 19th .....	13	19	3	10
„ Sept. 20th to Oct. 17th .....	14	22	6	10
1905—July 2nd to July 22nd .....	—	1	1	—
„ July 23rd to Sept. 16th .....	16	19	5	13
„ Sept. 17th to Oct. 14th .....	15	16	4	3

The figures and percentages for the years 1906 and 1907 are herewith given.

These again do not permit of any positive statement, except that here again the tendency of the cases in children to relative increase in the third and fourth quarters is clearly manifested.

They go, therefore, to increase the force of the figures given in the years 1900 to 1904.

ENTERIC FEVER ATTACKS, 1906.

Period of Attack			Children under 14 years	Males, 14 years and upwards	Females, 14 years and upwards	
					Workers	At home
First Quarter.....			15	45	10	10
Percentage .....			18.75	56.25	12.50	12.50
Second Quarter .....			10	19	7	5
Percentage .....			24.39	46.34	17.07	12.20
Number of Weeks	3	July 1st to 21st .....	6	7	2	5
	8	July 22nd to Sept. 15th .....	13	29	7	7
	4	Sept. 16th to Oct. 13th .....	23	28	12	8
		Percentage .....	28.57	43.54	14.29	13.60
	11	Oct. 14th to end of quarter ..	38	44	10	24
		Percentage .....	32.76	37.93	8.62	20.69



ENTERIC FEVER ATTACKS, 1907.

Period of Attack			Children under 14 years	Males, 14 years and upwards	Females, 14 years and upwards	
					Workers	At home
First Quarter.....			11	17	5	6
Percentage .....			28.21	43.59	12.82	15.38
Second Quarter .....			6	24	2	8
Percentage .....			15.00	60.00	5.00	20.00
Number of Weeks	3	June 30th to July 20th.....	4	3	0	2
	8	July 21st to Sept. 14th .....	4	9	4	4
	4	Sept. 15th to Oct. 12th .....	4	16	4	1
		Percentage .....	21.82	50.91	14.54	12.73
	11	Oct. 13th to end of quarter ..	19	73	15	24
		Percentage .....	14.50	55.73	11.45	18.32

ANNUAL COURSE OF THE DISEASE.

We may now pass to a consideration of the course followed by the disease from week to week in successive years, and for an entire period of 10 years, 1897-1906. The facts are exhibited in the following table, which for its correctness depends on the determination by the Sanitary Inspectors of the dates on which each illness commenced.

This may not be considered the most secure of foundations, yet the figures themselves bear testimony to the general correctness of the data.

On the opposite page is Table III., showing week by week for each of the ten years 1895-1906 the number of notified cases commencing to be ill in each week, and showing also the aggregate number for the ten years of cases commencing in the corresponding week.

These figures are added up for the ten years to show the mean course of the disease as revealed by notified cases week by week, and the total numbers in weeks are then gathered into four weekly periods.

Year	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1897	10	10	7	5	10	5	8	7	11	6	8	6	4	5	10	3	2	3	5	3	3	1	4	3	3	6	4	3
1898	13	12	19	14	12	12	9	15	12	9	8	2	6	9	10	14	10	11	4	2	1	3	6	4	1	1	1	7
1899	12	14	16	12	5	9	6	5	3	5	6	3	5	7	6	7	10	3	1	6	4	6	3	4	5	4	2	0
1900	11	8	7	10	2	7	5	7	4	2	2	4	6	4	10	2	3	8	4	1	2	2	7	5	0	2	0	2
1901	4	3	3	3	3	5	4	0	5	2	5	7	7	8	9	11	2	2	4	4	4	1	5	4	5	1	1	3
1902	3	3	3	6	5	7	6	7	9	6	9	6	14	10	4	4	10	1	2	7	3	7	3	12	6	5	7	3
1903	8	3	4	5	8	4	11	7	4	8	4	4	7	7	3	4	3	3	6	4	14	4	3	3	8	6	3	6
1904	3	5	9	11	1	3	5	3	6	8	9	4	7	7	11	10	10	6	5	7	2	4	3	3	2	3	1	3
1905	9	11	7	12	12	3	5	5	9	10	12	4	7	7	11	5	10	8	6	4	4	1	3	1	2	2	1	1
1906	7	14	15	14	7	4	2	6	2	3	4	2	1	3	1	3	8	8	0	3	3	3	2	4	3	3	9	4
	80	83	90	92	65	59	61	62	58	56	61	53	63	70	73	66	70	47	39	39	46	31	42	48	47	40	33	29
	345				247				228				272				195				167				149			
Year	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
1897	6	5	3	8	7	17	20	12	13	19	20	16	17	11	12	13	18	12	20	21	20	17	23	12	..	..	..	..
1898	4	4	6	7	8	7	23	15	13	18	21	28	39	31	30	21	10	20	17	20	20	18	14	18	..	..	..	..
1899	2	5	5	5	15	11	12	10	12	10	15	12	6	9	7	10	8	9	10	9	10	4	7	9	..	..	..	..
1900	3	6	7	9	9	8	13	10	12	9	17	14	19	11	10	10	5	12	7	7	9	3	1	3	..	..	..	..
1901	3	7	13	15	13	12	13	22	14	20	14	17	27	11	15	9	9	9	6	14	3	6	2	3	..	..	..	..
1902	4	9	10	6	5	8	10	7	5	17	20	11	9	12	12	10	3	10	5	14	9	5	5	10	..	..	..	..
1903	6	6	6	6	6	6	5	4	6	11	14	12	13	9	5	16	15	9	8	9	11	7	7	5	..	..	..	..
1904	6	6	9	8	7	9	6	10	13	7	18	7	7	4	7	9	5	7	6	6	5	12	6	1	..	..	..	..
1905	0	7	2	4	9	8	8	6	7	11	7	13	6	12	9	10	4	10	4	6	8	2	6	7	..	..	..	..
1906	5	3	7	2	6	4	4	13	20	19	14	13	22	16	23	16	7	14	9	8	6	8	6	8	..	..	..	..
	39	58	68	70	85	90	114	109	115	141	160	143	165	126	130	124	84	112	92	108	99	88	83	76	..	..	..	..
	235				398				559				545				396				346							

For purposes of comparison the deaths from Diarrhoea are treated in the same way, and are collected in Table IV.

TABLE IV.—DEATHS FROM DIARRHŒA, WEEK BY WEEK, IN SUCCESSIVE WEEKS OF EACH OF THE TEN YEARS 1897-1906, ADDED FOR THE TEN YEARS, AND GATHERED IN FOUR WEEKLY PERIODS.

TABLE IV.—DEATHS FROM DIARRHŒA.

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1897	1	7	6	2	7	2	2	3	5	5	1	3	5	7	1	3	1	4	3	4	4	5	4	4	4	5	8	7
1898	5	4	1	3	3	6	6	2	5	3	7	3	6	2	2	3	3	4	2	2	4	6	7	9	6	3	3	9
1899	4	3	2	5	3	2	0	2	8	2	4	2	4	4	1	2	4	1	3	4	5	4	9	7	8	5	6	7
1900	3	3	3	4	3	4	1	5	3	3	3	1	3	5	4	3	3	6	5	1	1	3	1	7	7	0	3	12
1901	2	4	4	6	1	6	1	3	7	2	2	4	0	4	8	0	0	3	3	4	5	6	4	1	9	1	6	1
1902	7	3	2	2	3	2	0	3	1	5	3	2	3	3	1	0	4	7	1	4	2	6	5	4	5	9	5	13
1903	3	4	2	5	8	4	5	2	3	2	4	5	1	1	5	4	3	7	3	4	1	3	2	1	4	5	6	0
1904	5	1	2	4	1	1	2	2	2	5	2	5	2	3	1	4	3	5	3	1	1	3	0	1	5	4	5	7
1905	2	5	3	3	0	0	0	1	1	2	2	1	3	1	1	3	0	6	3	1	1	0	4	5	4	3	7	6
1906	1	2	2	2	3	3	2	5	3	2	3	0	4	3	2	4	2	5	3	3	1	2	5	3	1	4	4	1
	33	36	27	36	32	30	24	32	38	32	31	22	31	33	28	25	22	44	27	31	33	32	30	46	40	48	48	71
	132				118				123				117				124				141				207			

Year	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
1897	15	33	71	150	167	116	73	65	46	28	18	5	8	10	4	4	4	6	5	4	2	5	1	6	..	..	..	..
1898	5	20	36	54	46	46	87	111	108	50	121	110	50	40	26	14	14	7	6	6	4	4	3	4	..	..	..	..
1899	22	42	75	103	107	136	128	129	81	79	32	16	9	4	11	5	2	6	4	4	3	5	4	1	..	..	..	..
1900	11	13	37	63	50	50	83	78	64	36	58	41	26	19	20	15	4	6	5	5	2	3	2	8	..	..	..	..
1901	36	79	122	119	107	110	86	68	61	35	26	21	12	7	8	6	4	2	2	4	3	1	4	2	..	..	..	..
1902	3	4	3	3	2	2	10	14	19	40	15	20	17	14	8	9	14	5	6	4	10	1	1	4	..	..	..	..
1903	14	14	23	29	39	42	31	21	24	20	26	20	22	11	7	4	6	0	2	4	4	3	3	5	..	..	..	..
1904	14	48	77	91	107	85	68	43	36	28	24	23	11	3	3	6	1	3	3	2	5	1	1	3	..	..	..	..
1905	22	62	81	89	67	81	61	61	42	20	15	10	9	5	4	6	3	5	2	4	4	4	5	3	..	..	..	..
1906	6	12	17	34	86	102	104	135	136	86	58	35	28	11	13	16	9	5	2	4	4	3	3	3	..	..	..	..
	148	327	542	741	772	770	731	725	617	483	393	301	192	124	104	84	61	46	37	40	39	33	21	39				
	1758				2998				1794				504				184				132							



We may first review the facts by noting the cases notified in quarters of the year.

TABLE V.

CASES OF ENTERIC FEVER REPORTED IN SUCCESSIVE QUARTERS.

	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
1897 .....	97	57	137	212
1898 .....	143	79	134	286
1899 .....	57	53	41	97
1900 .....	85	78	103	112
1901 .....	43	43	149	124
1902 .....	63	82	111	122
1903 .....	90	82	87	128
1904 .....	69	68	105	83
1905 .....	111	62	71	101
1906 .....	81	41	110	152
1907 .....	39	40	39	147
Total in Quarters.	878	685	1,087	1,564
Total..... 4,214.				

The aggregate number of cases reported is, thus, smallest in the second quarter, increases greatly in the third quarter, and again in the fourth, and sinks in the first quarter. When we look to particular years we find that, in general, the same order of magnitude is found. But not invariably. In 1901 and 1904 the numbers in the third quarter exceed those in the fourth.

If, now, mussels exercise a marked influence on the number of cases, this should be much more visible in the fourth than in the third quarter. This is, indeed, generally the case, but not always. This effect, therefore, may also be intermitted, and must, in fact, depend on the amount of Enteric Fever present in the neighbourhood of layings.

If, now, we follow the number of cases in the ten years, commencing from one four-weekly period to another, we find that the smallest number occurs in the 25th to the 28th week. The numbers then ascend in the 29th to the 32nd week, more quickly from the 33rd to the 36th week, and very quickly from the 37th to the 40th week. In the next four-weekly period the number remains about the same, and then descends through successive periods, at

first rapidly, and then more slowly through the rest of the year. The descent, however, is interrupted by a rise in the 13th to the 17th week, which is manifested in each week of the five. It cannot, therefore, well be casual.

When we consider the number of cases occurring in particular weeks of the year over the ten years, we find that the numbers begin to ascend in the 30th week, undergoing a slow gradual and uniform increase until the 35th week is reached, in which week there is a sudden ascent. The numbers thus reached are maintained for three weeks longer. In the 38th week a second sudden increase occurs which is maintained for four weeks, the numbers suddenly rising in the 41st week. After this an abrupt decrease occurs to the 42nd week, the numbers in each week then slowly descending to the 28th week. The peak in the 41st week may be accidental.

We thus find an increase during 12 weeks, and a descent during 40 weeks to the same level. The ascent is marked by a gradual rise at first, and then by two sudden rises, and two plateaus maintaining the ascents thus gained. The sudden fall and subsequent slow decline are also striking features.

When we examine the course of the cases year by year we find that, in a number of years, there is a well-marked rise in some one week which is thenceforward maintained for a shorter or longer period. This phenomenon is a very striking one, and the true explanation of it could but throw light on the manner in which Enteric Fever is maintained in Manchester.

It is particularly well-marked in the years 1897, 1898, 1899, 1900, 1901, 1903, 1904, and 1906. The rise may be preceded by a partial rise, before what I have called the critical rise occurs, the partial rise lasting two, three, four, and five weeks. In 1903 and 1904 there is no preliminary minor increase.

In 1897 the increase lasts during the rest of the year and well into 1898. In 1898 it continues during the rest of the year. In 1900 it lasts about 12 weeks. In 1901 it lasts 16 weeks. In 1903 it lasts about 13 weeks. In 1904 it may be taken as lasting four weeks. In 1906 it lasts about 14 weeks.

The rise thus inaugurated is variable as regards its inception and duration, but is usually prolonged.

This critical rise commences in 1897 in the 34th week, in 1898 in the 35th, in 1899 in the 33rd week, in 1900 in the 35th, in 1901 in the 31st or 36th week, in 1902 in the 38th, in 1903 in the 38th, in 1904 in the 36th, in 1906 in the 36th. It is its occurrence which determines the mean rise in the 35th week.

In the years 1903 and 1904 it is possible that this rise did not occur, and that the rise in the 38th week was really the second rise of the curve. It is well marked in 8 years out of 10.

If we compare the figures showing deaths from Diarrhœa with the number of cases of Enteric Fever, we see that the range of increase in Diarrhœa is far

greater than in Enteric Fever, although there is always a substantial amount of fatal Diarrhœa at all seasons of the year. There is another difference in the slow descent of the Enteric cases. Deaths from Diarrhœa on the average begin to ascend in the 28th week, mount rapidly up to the 32nd week, remain on a level to the 36th, and then descend more slowly to the 46th week.

The ascent occupies only five weeks, the descent 10 weeks, the mean wave 19 weeks. During the remaining 33 weeks the number of deaths is practically stationary.

The commencement in the rise of the mean Enteric wave is two weeks after the mean increase in deaths from Diarrhœa, the critical rise is seven weeks behind the commencement of the Diarrhœa rise, and the highest point reached by the Enteric curve is also seven weeks after the highest point in the Diarrhœa deaths.

The intervals between the commencement of the Diarrhœa rise of deaths and the critical rise in Enteric Fever in individual years in which both are marked are: 1897 five weeks, 1898 five weeks, 1900 six weeks, 1901 three weeks, 1906 six weeks.

#### DISTRIBUTION OF CASES OF ENTERIC FEVER IN PLACE AND TIME.

It is necessary before beginning to discuss the causes at work causing the continuance of Enteric Fever to note how the cases are distributed throughout the City.

For this purpose, tables have been constructed showing the number month by month of cases newly occurring in each of the 18 sanitary districts into which the City is divided for each of the years 1900 to 1906 inclusive.

For the years 1903 to 1904 the facts are exhibited in spot tables given in the Annual Report for 1904, while in the Annual Reports for 1905 and 1906 the spot maps show the cases occurring week by week.

The impressions produced by a study of the table given in the Annual Report for 1904 are recorded in that report.

They may be restated briefly thus :—

1. Strictly local rises are liable to occur at all times of the year.
2. Such local rises occur in the first six months of the year 1900 in six districts ; in 1901 in one ; in 1902 in seven ; in 1903 in six ; and in 1904 in four districts.
3. They generally extend over two or three months, but may be limited to one, in which case infection in one family may be the cause.
4. The rises in different districts do not agree with each other in extent or in time.



5. The table for 1900-1904 given in the Annual Report for 1904 shows that in some districts the disease persists for long periods.

Thus in Ancoats there are two persistences, one for 10 months and another for 14 months.

In St. George's the disease persists from 1901 onwards to the end of 1904.

In the Central district one persistence lasts 13 months.

In Cheetham the persistences do not exceed six or seven months.

In Harpurhey one persistence lasts 10 months.

In Ardwick one persistence continued nearly two years.

Thus, while the acute phases of these local outbreaks endure only a short time, they are often parts of a longer persistence.

6. These persistences are not limited by season.

7. There is generally marked increase in autumn. More districts become affected, and the number of cases in individual districts increases.

8. As regards districts, however, this occurrence is partial. Always some districts are missed out, and these are different in different years.

9. The increases begin at different points of time and last for different periods.

10. The rise is never very great.

11. There is great difference between individual years. Thus, in 1901 and 1906, there is a tendency to concentration in the autumn, while in other years the rises in different districts are distributed over different parts of the year.

A study of the distribution in districts, and of the behaviour of the disease in different districts strongly suggests that the factors producing the outbursts are strictly local, and that the extension in autumn is in the main due to some intensification of the local infection rather than to the operation of any general cause.

#### STUDY OF INDIVIDUAL CASES.

We are thus brought to a study of the individual cases. Only by such a study can we clear up the difficulties. The difficulty of obtaining such a study, and the imperfection of the best study we have been able to make, have been already mentioned.

When in 1905 such a study was partially applied, it was found that between one-half and one-third of the cases could be probably traced to a previous infecting person, while about one-quarter were found to be in association with the previous consumption of shell-fish, mostly mussels. No fewer than 60 overlooked cases were discovered, and undoubtedly these play an important part in the spread of the disease.

We may now consider the various factors which may be thought of as operating to produce the changes observed in the behaviour of Enteric Fever during the year. It is especially the ascending part of the annual prevalence which we desire to elucidate, since the behaviour of Enteric Fever during the remaining nine months, in which it gradually declines, may be regarded as sufficiently explained by the facts collected in reference to infection and shell-fish.

It is desirable that the subject should be considered from as many points of view as possible, since it will be easy to omit some cardinal fact through forgetfulness of the circumstances or misprision of their importance.

We may enumerate the questions concerned thus:—

Do the notified cases represent the true relationships of the disease?

What articles of food or drink must be considered?

Reason for suspecting watercress.

Reasons for thinking that contaminated mussels play some part in causing and maintaining the autumnal rise.

May the rise be due to changes in the life processes of the bacillus, as, for example, growth in the soil?

What part, if any, can flies be supposed to play?

Will the extension of infection, local or otherwise, explain the whole matter?

How infection may be conveyed? Holidays may play an important part.

Carrier cases. Return cases.

Do the cases notified to the Public Health Office fairly represent the cases of Enteric Fever which actually occur?

From examination of the cases discovered by the Medical Officer of Health and Sanitary Inspectors, and from consideration of the period of the illness at which cases are reported, it is certain that a very large number of cases, probably no fewer than the number notified, are altogether overlooked. The overlooked attacks are more especially in children, so that the relative proportion of workers and children will be affected.

In the early Diarrhœa season there is a special tendency to overlook attacks of Enteric Fever in children, which are liable to be regarded as Summer Diarrhœa. Moreover, as August approaches, there is a decided disinclination to accept a fact like the presence of Enteric Fever in a household. Cases, especially in children, are, therefore, probably more liable to be overlooked at this season than at any other. Having regard to the proved potency of overlooked cases to spread infection, this must be regarded as an important consideration.

#### FOOD AND DRINK.

What, now, are the materials by which Enteric Fever may be conveyed ?

##### *Water.*

We may first consider the possibility that the rise in autumn is caused by drinking water. This possibility may now be dismissed. The subject has been considered in previous reports, and it has been pointed out that the incidence of Enteric Fever on different areas supplied by Manchester water from the same source varies greatly, and that the behaviour of Enteric Fever in adjoining sanitary districts of Manchester supplied from the same reservoirs and mains varies so greatly that it is impossible to think of water as it arrives in the mains being the cause of the increase.

##### *Milk.*

As regards the influence of the milk supply, we obtain for each case of Enteric Fever notified the name of the retail and wholesale dealer by whom the patient has been supplied. It would, therefore, be very difficult for any marked prevalence of Enteric Fever due to a particular milk supply to escape attention.

The possibility that some degree of infection may arise in this way, it is difficult absolutely to exclude. Yet careful investigation fails to reveal anything which would justify one in ascribing particular attacks to milk. Only in one instance has decided suspicion arisen in connection with a milk supply, and in that instance the numbers, though not large, were sufficient to guide us to the source of infection.

##### SOIL.

It has been suggested that with the advance of summer the bacilli of Enteric Fever planted here and there may multiply and come to the surface, or near the surface, from which they may subsequently be detached and in some manner be conveyed to articles of food. A considerable amount of work has been done on this subject by Robertson, Houston, Major Firth, and others.



On the whole, despite the favourable results obtained by Robertson under special conditions, it is doubtful whether typhoid bacilli do under ordinary circumstances multiply in the soil and come to the surface.

On the other hand, if Enteric stools be deposited on the surface the infective matter may be washed into the soil, if there is much rain, and diffused therein. The top layers of the soil being subsequently dried, and dispersed by wind, may conceivably carry the infection as dust, and so infect food.

This, again, is not a very likely cause of the autumnal rise, since, although the bacilli stand a good deal of drying, they are likely to be killed by sunshine, and, unless under very special circumstances, are not likely to be carried to food in sufficient numbers to cause infection.

On the other hand, the occurrence of cases of Enteric Fever in Manchester has not infrequently been associated with the opening of the soil for drainage and other work, so that the presence of bacilli in the soil may be not uncommon.

It is desirable also to recall here the indications furnished by the age of cases at different periods of the year. These would point, however, rather to the accumulation of numerous superficial foci near dwellings than to the soil.

In searching for the explanation of what I have called the critical rise in the annual curve, one found that at some period antecedent to this rise, most commonly about five weeks, on an ascending temperature, there was usually a considerable rainfall preceded and followed by drought.

It is to be observed, however, that both earlier and later in the year similar changes were not followed by the rise in the number of Enteric cases. Whatever the connection may be, therefore, it is one which can only exist at a particular epoch, and does not hold generally.

The first idea which presented itself was that at this particular period changes occurred in the soil leading to the appearance of the typhoid bacillus on the surface. It is, however, inherently improbable that such changes would be confined to one particular and very limited time of the year. On the other hand, the period characterised as above was marked by the commencement of Summer Diarrhœa, at which time Enteric Fever is liable to be concealed by Diarrhœa simulating it, and Enteric stools are then liable to be deposited near houses in the poorer parts of Manchester.

We have seen in previous reports how close is the association between the numbers of house-flies and the number of deaths from Summer Diarrhœa, and we are led to consider whether the beginning of the Enteric rise may not also be associated with the increase in numbers of the house-fly.

It may be that the relation of Enteric Fever to closets may help us to a conclusion as to whether the house-fly has to do with the increase from the 30th to the 31st week.

## RELATION OF ENTERIC FEVER TO CLOSETS.

The statistics given by Boobyer, Scurfield, and Tattersall go to show that with the increased proportion of middens in our large towns the amount of Enteric Fever also increases, and we turn, therefore, to such facts as we possess about closets to see whether we can obtain any light from that quarter.

Statistics were given in the Annual Reports of the Medical Officer of Health for the years 1891 to 1898 in reference to closets, which were then intermitted for two reasons.

It was felt that the information with regard to the number of houses served with middens, pails, etc., was unsatisfactory, and, moreover, the number was constantly changing of each class.

There was, however, one table which seems capable of giving some information. It may be remembered that in connection with some occurrences of Enteric Fever in Eccles, Professor Delépine showed that the bacilli of Enteric Fever could remain alive in the walls of middens for a whole year, and this, taken along with Robertson's investigations, appeared to show that under some natural conditions Enteric bacilli are capable of retaining their vitality over long periods. It will also be remembered that these middens are specially favourable to the propagation of the house-fly, presenting, as they do, suitable conditions of warmth and moisture.

The table in question showed the number of pails, middens, etc., occurring at houses in association with notified cases of Enteric Fever. Now, if we ascertain the mean proportions of the respective classes of closets for the whole year, it will be interesting to ascertain and compare with these figures the percentage of each class in the separate months. In this way we shall escape from the uncertainties above mentioned, to a very large extent, according to the method which we adopt. The number altered to water-closets was, however, up to 1898 small compared to the numbers now being altered, and we shall content ourselves with adding the closets in each class for the eight years and taking the percentages on the added figures.

We thus get the following table, which presents some features of interest. We see that marked increase in the number of cases associated with middens tends to take place sooner than in those associated with pails, and to be more conspicuous as early as August. The number of cases, also, does not continue to increase in October, as with pail-closets.

The most striking facts, however, is the higher proportion of cases of Enteric Fever associated with middens in August, September, and October.

The figures are as follows :—

PERCENTAGE OF CASES OF ENTERIC FEVER OCCURRING THROUGHOUT THE WHOLE YEAR, AND IN EACH MONTH OF THE YEAR FOR THE EIGHT YEARS 1891 TO 1898, IN ASSOCIATION WITH PAILS, MIDDENS, AND WATER-CLOSETS RESPECTIVELY.

	Whole Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Return of closets in the City in June, 1894*
Pails .....	69.75	77.14	75.55	76.87	72.50	75.21	78.37	69.04	62.38	61.09	64.87	66.05	71.92	78,486
Middens .....	22.94	16.58	18.50	18.71	20.71	18.38	18.75	21.83	28.75	31.05	26.05	24.43	21.52	23,176
Water-closets .....	7.31	6.28	5.95	4.42	6.79	6.41	2.88	9.14	8.87	7.86	9.08	9.52	6.56	24,300

\* Apart from uncertainties as to the precise number of privies, it is evident that the above number of closets does not even approximate to the number of dwelling-houses, since notwithstanding the large number of houses having privies in common, the total number of closets considerably exceeds the total number of houses in the City. The statement is given, however, because, although the numbers of pails and water-closets is considerably over the numbers of houses furnished with the respective class of accommodation, a rough idea is presented of the proportions.



It will be seen that, allowing for a considerable margin of inapplicable details in the return of the respective closets, houses furnished with water-closets are in much less close association with Enteric Fever than are those furnished with pail-closets and middens. It does not at all follow that this relation will be maintained when middens are extinguished—as, except for the districts incorporated in 1904, they nearly are—or as pail-closets continue to diminish.

It was shown in the Annual Report for 1905 that if the notifications received at the Public Health Office are fairly complete, Enteric Fever is a disease of the poor in this City, and doubtless the gross procedures which lead to spread in a household will continue to occur. Yet we may confidently look for a great diminution in the amount of Enteric Fever owing to the conversion of midden privies to water-closets. In this connection, the increased well-being of the poorer classes may have played a part in the reduction of the mortality from Enteric Fever.

The manner in which the percentage of cases associated with middens ascends in July, August, and September is very striking, as is also the gradual decline in the percentage through October, November, and December.

This is not to be taken to imply that pail-closets with the gross impurities which they cause near dwellings are not responsible for the spread of Enteric Fever. What the figures do strongly suggest is that in some way the middens begin in July to exercise a special influence on the propagation of Enteric Fever, which becomes more marked in August, and culminates in September.

What is the explanation of this circumstance? For reasons already given, one hesitates to ascribe this effect to aërial conveyance or transmission through soil. The midden privies in Manchester are or were large deep open brick pits, usually common to two houses, and requiring to be emptied once in three months. All sorts of refuse are thrown into them, including ashes, paper, and vegetables. They usually contained a quantity of liquid in the bottom.

The more superficial layers are, however, comparatively dry, except when wetted by rain. They form excellent breeding grounds for the domestic fly, as do also collections of stable manure, and the huge tips of ashes and vegetable refuse which disfigure some of the more outlying parts of the City. According to Mr. Gordon Hewitt there are two kinds of house-fly, a larger and more numerous species which breeds in collections of horse manure, and a smaller species which breeds in the recesses of pail-closets. No doubt the privy middens and tips will serve for the propagation of both. Enormous masses of flies are generated in these tips, which are so situated that they must, in the aggregate, come more in relation with midden districts than with districts served with pail-closets.

If we refer to the actual figures, we find that the number of cases associated with pail-closets culminates in October. In the case of middens, the numbers are about the same in September and October. If we assume that house-flies play an important part in the autumnal rise, this circumstance seems capable of explanation. The flies generated in middens, which have acted as receptacles for Enteric stools, and in which Enteric Fever is often persistent, will be in a position to convey the disease more directly than those generated in receptacles for horse manure, which only visit pail-closets secondarily. A little delay will suffice to explain the difference between the two sets of figures, as may be seen by reference to the actual number of cases associated with pails and middens respectively.

The observation which I made from year to year relative to the critical rise in one week of Enteric Fever, having reference to a previous rainfall preceded and followed by warm dry weather, seems to fall into line in the light of the observations by Dr. Griffiths, of Hove, on the house-fly recorded in "Public Health," May, 1908. According to this observer warmth and moisture are necessary for the proper development of the larvae, and moisture is necessary, so that when they approach the pupa stage they may plant themselves near the surface. This observation, then, might explain why rain preceded and followed by warm dry weather may play an important part in the diffusion of the disease.

It may be added that if atmospheric warmth alone, such as may be supposed to favour the development of the bacillus of Enteric Fever, sufficed to produce an increase, and therefore an increased diffusion of infection, it is difficult to understand why the middens do not begin to react early in July after the hot days of June. Not until flies become abundant is the relation manifest.

How far would the hypothesis of spread by flies explain the rise of Enteric Fever in autumn ?

It has been shown in the Annual Reports for 1904, 1905, and 1906 that if a number of fly traps are set in different parts of the City; the flies collected in each district daily and numbered, and the numbers added for all the traps and collected in weeks, a close relation exists between the number of deaths from Diarrhœa and the number of flies captured in weeks, the number of deaths closely following the number of flies captured in the weeks before or in the week but one before.

If, then, we take the mean numbers for ten years, we may affirm that the number of cases of Enteric Fever begins to ascend four or five weeks after a considerable increase of flies, and two weeks after a marked increase of deaths from Diarrhœa.

In the 32nd week the number of deaths from Diarrhœa suddenly approaches the maximum, while the first marked rise occurs in the Enteric curve in the 35th week, corresponding to a great increase of flies in the 30th or 31st week.



The number of mean deaths from Diarrhœa remains on a level from the 32nd to the 35th week inclusive; the number of cases in the Enteric curve remains on a level from the 35th to the 38th week inclusive, and then ascends.

We may, however, include the 37th week in the Diarrhœa plateau, and we may therefore say that, corresponding to a mean high level of flies from the 30th to the 37th week, there is a high level of Enteric cases from the 35th to the 41st week. Are we to ascribe the second rise in the Enteric cases from the 38th to the 41st week to the addition of direct infection arising from the primary cases, or to the greater potency of flies in the last period owing to the previous establishment of numerous centres of infection from which the flies can operate? If we consider how persistently the rise is maintained, it will be evident that direct infection or some other cause must play an important part in sustaining the latter part of the rise. Yet it is without any confidence that one mentions this in connection with the second rise in the Enteric curve.

On the other hand, in spite of the long period of five weeks elapsing between the increase of flies and the increase of cases of Enteric Fever, one is inclined to associate the one rise with the other.

Having regard, however, to the difficulty of explaining the Enteric secondary rise as produced by increase of the house-fly, one is obliged to ask some other questions.

Is the relation between the mean curves exhibited in every year? The relation is only generally exhibited, and is not a close one.

Now, on the fly hypothesis, it is to be remembered that what must be regarded as a considerable increase in flies remains for a time comparatively inoperative, even in the case of Diarrhœa. Special conditions, then, are needed. It requires not only a very great number of flies, but also a considerable number of centres of infection. The relation may fail because the latter are wanting.

On the fly hypothesis, it is on this ground that we must explain the failures in particular weeks. It has to be said that on any conceivable hypothesis the same difficulty presents itself.

If we study individual years, the general accordance between the curves which we have seen to prevail for the ten years ceases to hold.

In 1897 the critical rise of Enteric Fever occurs in the 34th week. This is two weeks after the Diarrhœa deaths approach a maximum, and three or four weeks after the flies presumably approached their maximum. In 1898 the rise is in the 35th week, and nearly coincides with the maximum week of flies.

In 1901 the rise is in the 31st week, and is only two weeks after the presumed maximum week of flies.



In 1904 the rise is five weeks after the presumed maximum of flies.

In 1906 it is in the 36th week, and is only two weeks after the flies approach a maximum.

If, therefore, there is a relation to the number of flies, it is a complicated one. It is evident, indeed, that any rise due to transmission by flies will be complicated by the number of centres of infection to which flies have access, by the number of flies, and by the number of secondary cases due to primary overlooked attacks due to transmission by flies. In the doubt which exists in the case of Enteric Fever, as to the extent to which flies can act as sources of infection, we must ask what other factors are operative.

### *Foods.*

The foods which we most readily think of are watercress and other raw vegetables, fruits, potatoes, and shellfish.

Now, watercress is in season from December to May, and it is, therefore, in this season that it may be expected to produce its effect, if any. It is at first better and dearer, becoming cheaper in March. I know, however, of no reason for supposing that it comes from other sources in March and April, though this is a possibility.

In 1905 a number of cases were found to have been associated with the previous consumption of watercress, and some suspicion of a connection was aroused.

Does this explain the mean rise in the 13th to the 17th weeks?

I cannot think so, having regard to the absence of any such previous or subsequent indication, as watercress continues to be largely consumed in May.

The mussel season, however, is over on April 30th, and it is suggested that an effort is made to clear out the remainder of the cheaper mussels. This is a conceivable hypothesis, and it may be that there is some of the observed rise due to this cause, though the explanation is not a satisfying one.

We must, however, also ask whether direct infection is increased at this season. The Easter holidays occur in the end of March and the beginning of April. It seems scarce possible to ascribe the rise to this cause, since it begins in the 13th week. It is increased, however, in the 15th, and reaches its highest point in the 16th week, three weeks after the holiday.

Now, if direct infection is increased by the increased commerce during holidays, some effect should be visible from the Christmas holidays, which we may take to coincide with the last week in the year.

An increase of small amount is, in fact, observable in the second, third, and fourth week after the holidays.

These effects are small, and may be open to doubt, but they suggest that the effect of the summer holiday in augmenting direct infection should be considered.

The April rise, then, may be due partly to increased use of infected mussels, partly to increased commerce between persons—the result of the Easter holidays. Another possible source of the Enteric rise in April is the great increase in atmospheric dust which occurs towards the end of March. We can imagine the winds sweeping along the dusty middens, and whirling infected matters out of the recesses of pail closets.

Such an explanation, however, could only apply to the limited period of the equinoctial gales. It is certainly singular that three to four weeks after the equinoctial gales in spring, and three weeks after those in autumn, a sharp rise occurs.

That blown dust in general has no such effect appears to be shown by the decline in Enteric cases in May and June.

We have considered watercress.

Other foods which are open to become carriers of Enteric infection are lettuce and celery, which may occasionally be washed in contaminated streams or well water.

There is also another, and perhaps more serious, source of contamination of all raw vegetables and fruits. Small greengrocers and hawkers sell not only these vegetables, but also mussels, and pass from handling one to handling the other. An unquestionable risk is thus incurred, though, fortunately, most salads and fruits are out of season before mussels come in. But this does not hold good for plums, apples, and pears.

There is nothing pointing to lettuce or celery as sources of infection.

The various fruits come into season at nearly the same time from year to year, and are consumed at corresponding periods of the year. They none of them, therefore, fulfil the condition of variability needful so that they may serve as main elements in the seasonal rise of Enteric.

We may think of different fruits as liable to contamination when they are picked, while they are in the central market, and afterwards in the shop of the retail dealer, where they are liable to be stacked by mussels, and handled by persons themselves infected. They are often visited by flies. There is also risk that some growth of the bacillus entericus may occur on them. The risk of contamination is, therefore, not a negligible one. Probably cherries and plums are the most risky of stone fruits. Apples and pears, however,



may also be contaminated for the reason above given. Milk, also, is sometimes sold from the same counter as shell-fish, and occasionally may be contaminated. The contamination, when it occurs, is probably limited in extent, and there is not time for much growth to take place. Still, if at any season growth takes place, it will be in summer and autumn.

Infection from strawberries and gooseberries must be slight, and from cherries also, while from plums infection might occur early in September and onwards to the first week in October; from apples and pears from September onwards. If we consider the large quantity of fruit consumed, the numerous shops, the occasional presence of the disease in the shopman, the frequent presence of shell-fish, the crowds of flies which haunt fruit, and the numerous dirty hands through which it has passed, we cannot but think that fruit must exercise a real influence on the spread of Enteric Fever, though the extent of that influence may be difficult to assess. Persons suffering from Enteric Fever are frequently found to have consumed fruit anterior to their attacks, at a period when they might have been affected. Yet one hesitates to draw any conclusion in individual cases.

The bacillus entericus grows readily on potatoes, in broths, and on meat juices. Yet, unless for people who eat cold potatoes and use cold soup—not a large number—it is difficult to see where infection can come in. People, however, who buy chips may run more risk by contamination of these from the vendor's hands. This kind of risk must, however, be regarded as of an altogether minor character, and less in degree than the risk from bread cut by the housewife who is nursing a case of fever.

#### *Shell-fish.*

We may now consider the part which shell-fish play in the propagation of Enteric Fever. The information given to me by Mr. Holburn for the Royal Commission on Sewage was that in England and Wales there is a close season for mussels from April 30th to September 1st, but that there is no close time for mussels in Scotland or Ireland. The history of individual cases of Enteric Fever, and a visit to the shops, shows that a quantity of mussels is consumed in Manchester in the close season. The supply is, however, greatly reduced. What comes, then, is chiefly from Ireland? It was also stated by him that the daily supply from September to Christmas is 500 to 1,000 bags, averaging one cwt. each; from Christmas to the end of April, half that amount. These are averages, and no doubt there are considerable fluctuations.

It should be added that, during September, the market is liable to be glutted, when large quantities of mussels go bad and are condemned. This circumstance would probably heighten the risk of Enteric from mussels.



There should, therefore, if the amounts brought from contaminated layings vary in a manner corresponding to the total supply, be not much more than half the cases in the first four months of the year associated with mussels that there are in the last four months.

The numbers are, for the years 1897 to 1901, 15 and 31 respectively.

The numbers for some recent years are :—

Jan. to May	Year	Sept. to Jan.	May to Sept.
8	1903	16	5
12	1904	22	1
42	1905	35	4
Jan. to April		Oct. to Jan.	April to Sept.
37	1906	37	?
6	1907	44	17

The cases are, therefore, not distributed in 1905 and 1906 in proportion to the reputed quantities sold at an earlier date.

The reasons for believing that the cases associated with previous consumption of mussels stand in causal relationship with such consumption may be thus stated:—

1. From time to time two persons consuming mussels purchased from the same source at the same time are subsequently attacked by Enteric Fever.

Such instances occur—one in 1899, two in 1901, one in 1902, one in 1903, none in 1904, four in 1905. These cases, sparse as they are, give greatly increased weight to the suggestion that the disease is contracted from infected mussels.

2. The cases traced to some previous source of personal infection are separate from those traced to shell-fish.

In 1904, out of a total of 319 cases, 15 were traced to direct personal infection and 34 were in association with previous consumption of shell-fish. In no instance were both sources in evidence in one case.

In 1905, 131 cases were traced to previous attacks, while 99 were in association with previous consumption of shell-fish out of a total of 340 cases. In only five instances could a case be brought into both categories. In three of these direct infection could practically be excluded, while in two there was doubt as to which source should be chosen. These facts may be regarded as affording fairly strong presumption of causal connection in those instances in which cases are associated with previous consumption of shell-fish.

3. In 1902 an investigation was made as to the consumption of shell-fish in 1,354 houses, inhabited chiefly by artisans, and it was found that shell-fish had been used at one or another time during the previous year in 384 houses. At 90 houses they had been consumed raw, at 360 cooked, at some they had been consumed both raw and cooked.

In what proportion have raw and cooked mussels respectively been used by the cases found to be associated with the consumption of shell-fish ?

Taking the years 1903 and 1904 together, we get the cases consuming mussels thus distributed :—

Raw		Cooked		Both raw and cooked
78	....	16	....	6

In assessing the significance of these figures, we have to remember that a large quantity of mussels is consumed outside the home by young men and women, and that these are necessarily raw. Allowing, however, for this circumstance, the complete reversal of the figures shown above is an argument in favour of association between consumption of mussels and occurrence of Enteric Fever.

4. A large quantity of the mussels consumed outside the home are obtained from street hawkers. It may be assumed that these are, on the average, most likely to carry infection. No small quantity, it is stated, is consumed by men more or less intoxicated as they leave the public-house. The mussels used at the home have also been, not infrequently, obtained from street hawkers.

Nevertheless, in a good many instances it has been possible to trace the mussels brought into association to the retail dealer, and from the retail dealer to the wholesale dealer. From thence we have been able in not a few cases to discover the layings. Now, we know who are the general dealers in shell-fish, and what are the layings from which mussels have been sent to Manchester.

In this way we discover that there is a tendency for some dealers to be more concerned with these cases than others.

In the Report for 1905, it was shown that there was a tendency for the cases belonging to the respective dealers to come in rushes (see p. 92, Annual Report 1905), nor did these rushes correspond to each other in point of time.

Moreover, if there is a tendency for particular dealers to be involved, there is a far greater tendency for particular layings to be concerned. One particular mussel known as *Conway* has again and again come under suspicion.

In the beginning of 1907, however, a list of 23 shell-fish purchases were submitted to the wholesale dealers, who were asked to say where the respective mussels came from, and no fewer than 15 came from *Conway*.



In the same way, though to a less extent, attention has been directed to certain other layings : in Ireland, and off the West Coast of England, and Wales. It must be admitted that these facts greatly add to the probability that we are dealing not merely with an association but with infection.

As to the extent to which infection and association correspond, we cannot speak very positively. Yet, on the above facts, there must be a considerable number of infections. The exposure, however, is excessive.

The layings implicated are but few in number.

In endeavouring to estimate the effect produced by infected shell-fish in Manchester, we must remember that, inasmuch as the seaside or riverside towns contributing to that effect will have undergone their early autumnal increase prior to the commencement of the mussel season in Manchester, and that this autumnal Enteric increase in these towns may be expected to go on ascending up to late in September—partly from the addition of their own Enteric cases, partly from Enteric convalescent visitors, and partly owing to their own consumption of mussels—we may expect that infection arising from shell-fish consumed in Manchester will be near its maximum at the commencement of the shell-fish season, that is, towards the end of the first week in September, and will go on increasing for three or four weeks. Thus we have :—

(1) The gradual increase of Enteric in the seaside or riverside towns from the 30th to the 35th week, remaining stationary to the 38th or 39th week, gradually increasing contamination of the shell-fish beds from the 31st to the 36th week, remaining stationary to the 39th or 40th week.

Resulting cases in the towns from the 38th (being the first possible week) to the 42nd or 43rd week, the highest level being attained about the 38th week.

(2) Infection from visitors, acting in the same manner and at the same time.

(3) Secondary infection of shell-fish arising from consumption of shell-fish in the towns themselves by persons subsequently visiting the seaside, commencing in the 38th week, being a fortnight after the consumption of the shell-fish. This may be expected to produce some increase in Manchester Enteric Fever about the 41st week.

There would thus be produced for some time an increasing contamination, which would tend to raise the Enteric incidence in Manchester from the 38th to and beyond the 41st week.

It must be remembered, however, that, so far as other influences are concerned, the force of these may now be accepted as diminishing.



If, then, we are to ascribe the rise in Enteric cases from the 38th to the 41st week to infected mussels, we must regard this effect as increasing for some time, and overriding the tendency to diminution from other causes for a brief period. The data available do not suffice to put this suggestion to the test in any manner which can be regarded as convincing.

It is really only for one year that the investigation of the cases has been sufficiently rigorous to permit of the facts being regarded as reliable.

The facts available, when added for a number of years up to and including 1906, give :—

Cases commencing in												
the successive weeks	37	38	39	40	41	42	43	44	45	46	47	
Cases associated with												
mussels .....	7	11	18	9	8	9	9	8	5	6	3	

So far as they go, and imperfect as they are, they suggest an influence culminating about the 39th week, and more or less sustained up to the 44th.

There does appear to be some drop in the Enteric curve at this point, and it does also appear that the influence of the shell-fish is most acute for a period of three or four weeks, remembering that it can only be partially felt in the 37th week.

The figures shown for this period, even on the very imperfect investigations made, are considerably in excess of those obtained for any other period of the year, and we may, I think, assume that the second rise in the Enteric curve for Manchester is due to infected mussels to some extent.

At all periods of the mussel season, moreover, we must think of Enteric Fever as receiving reinforcement, or being liable to receive reinforcement from infected mussels, most acutely at the commencement of the season, but also at other periods.

Although the above figures are below the contributions thus made, except for a brief period, we are to conceive of these contributions as not large, and irregular in their distribution. They are unable to prevent the gradual fall of the Enteric curve, and, although on the partial removal of English mussels from the market at the end of April, a fall occurs in the number of cases of Enteric Fever, it is not a great one.

We must consider the contribution from shell-fish as essentially secondary.

## INFECTION.

We appear to be on much more secure ground in dealing with direct infection. But here, also, though the occurrence of infection in households delays the fall in the Enteric cases, it is unable to prevent it. Infection, therefore, as it occurs in winter and spring, what we may call household infection, is not of itself sufficient to prevent the decline or, we may suppose, the extinction of Enteric Fever. The same observation applies to "carrier" cases. "Carrier" cases are persons who have had Enteric at some previous time—it may be many years before—in whom the bacilli remain in a living condition though not producing any symptoms, and who from time to time are able to produce extensions of the disease. There is no reason for supposing such cases to be more potent for infection at one season than another, and the autumnal increase of the disease, which is responsible for its continuance, can scarcely be ascribed to these cases. It is worth while enquiring, however, whether under certain circumstances infection from individual to individual may be rendered operative to such an increased extent as to effect an increase in the number of cases.

In considering what part personal infection can take in the dissemination of the disease in August and September, we have to remember that Enteric Fever, although it is, as a matter of fact, largely spread in this manner, is with difficulty so spread, and that in general the persons shown to be infected one from the other have been in intimate association.

It appears to be clear that it is not propagated to any great extent in school, by overlooked attacks or otherwise, although conveyance at school cannot be entirely dismissed as a possibility.

We cannot, therefore, expect that during the school holidays, or corresponding to them, we should have that diminution of Enteric Fever which occurs in the case of Scarlet Fever and Diphtheria.

On the other hand, the children released from school will, no doubt, visit much more at each other's houses than during the continuance of school, with the possible result that the disease may be thus contracted.

If this is an important factor, we might expect to find a number of histories in which disease was contracted at this period from such visits.

We do, in fact, get some, but nothing to account for the degree of increase now observed. On the other hand, the exposure to overlooked attacks, and the danger of eating contaminated food, must in this way be increased. Moreover, at this period, the children released from school find their way into the back passages, chase their balls into privy middens, soil their persons in many ways, and sometimes devour fruit picked from the most unsavoury places.

It is, however, in general not until the end of July or the first week in August that they get taken to the seaside by their parents, and crowded together in lodging-houses. At these places the parents and older members of the family



regale themselves with shell-fish, gathered often from neighbouring and infected grounds; while the children rejoice in fruit, which is not always beyond suspicion.

The oyster season begins on August 4th. The school holidays are over on August 17th, but after this date, up to the second week in September, crowds succeed to crowds of young adults from the towns, the accommodation in the houses being strained to its limits. Here are to be found from time to time overlooked attacks of Enteric Fever, convalescents from the same disease, and, we may be quite sure, unsuspected “carrier” cases.

The consumption of shell-fish continues to increase. Under these circumstances, we may be sure that Enteric Fever is not very infrequently contracted during the holidays.

Have we any evidence that any considerable number of cases is infected away from home during the holiday season? Unfortunately, no record has usually been made of these cases, but there are few years in which some do not occur, and, as it happens, in the Annual Reports for 1899 and 1900 lists have been made out of cases contracted away from Manchester. The number is so considerable that it appears worth while to go over the records. There seems to be no doubt that the increase in the 35th to the 38th week must receive a contribution from this source. Why should this increase on the average occur in the 35th week? It should be noted that the holiday of the young adults and adolescents is later than that of the families and young children, and it is these who are specially prone to contract Enteric away from home for several reasons—amongst others, owing to the quantities of shell-fish which they consume. Taking the latent period of Enteric Fever at a fortnight, the rise in the 35th week and its continuance up to the 38th week might thus be partly accounted for.

In 1898 and 1899 a considerable number of cases were put down to consuming shell-fish at Blackpool; in 1898, five; and in 1899, four.

Dr. Jasper Anderson had previously shown that Enteric Fever was being spread in Blackpool by mussels grown on the pier.

From the Annual Reports for 1905 and 1906, we find that in these years there were contracted outside Manchester, in quarters:—

	1st	2nd	3rd	4th	Total
In 1905 .....	0	5	9 or 11	3	..
„ 1906 .....	5	1	8	2	..
Both years .....	5	6	19	5	35



This would appear to account for the rise in the later part of August, but to render this explanation satisfactory, it will be necessary to classify the cases according to age, sex, week of commencement of illness, etc.

A detailed examination of the Inspector's sheets in these years does not, however, supply evidence supporting the suggestion that the additional cases in the third quarter are due largely to the usual seaside holiday, although this negative circumstance cannot be accepted as disproving the suggestion.

Carrier cases, as already mentioned, are cases of Enteric Fever who have recovered from an attack undergone perhaps years, perhaps many years ago, and whose excreta are found to contain great numbers of typhoid bacilli.

When a large number of persons are examined, under certain special conditions, more than one per cent. of these "carriers" are found among persons apparently well. These cases appear to become from time to time actively infective, and Ledingham, Chalmers of Glasgow, and Davies of Bristol, in this country, have traced outbreaks of Enteric to "carriers." There is no reason to suppose that so high a proportion occurs in the general population, nor that of those which do occur more than a small proportion are actively infective. Yet it is probable that such cases play some part in keeping alive the infection of Enteric Fever, and the nests which we have demonstrated in particular districts, and which persist sometimes for long periods, may be partly due to their presence in the districts. It is evident that the August holiday offers a great field for the maleficent operations of active "carriers." Such observations as those of Ledingham and Davies have placed this question on a new basis. But the idea is not entirely a new one. In 1897 an outbreak of Enteric Fever in St. Mary's Hospital was traced to the use of a particular closet, and from thence to one of two patients in a ward, neither of whom gave a recent history of Enteric. One of these was found to give a well-marked serum reaction, and suspicion was strongly directed to this patient as the cause of the outbreak.

Until, however, careful analysis has been made of the cases which have contracted Enteric Fever outside the City for a number of years, we cannot say precisely for how much they are capable of accounting, nor from what sources their illnesses may have been derived.

Meantime, it is evident that any infection present in the environment of those making summer holiday has very special opportunities for producing a marked effect. The holiday-makers are crowded together. There is likelihood of infection from infected fruit, shell-fish, and other foods.

The infection is more likely to remain viable at that season than in the colder months.

Yet, if holiday-making is capable of producing so marked an effect in August, some effect should be manifest, one would think, from holidays at other seasons. There are three other holidays in the year—at Christmas, Easter, and Whit Week. Now, following the former at an interval of three or four weeks, a small rise is manifested. True, the rise in April cannot be entirely due to holidays, but the highest point may own some connection. With regard to the Whitsuntide holiday, there are probably not the same opportunities for infection. There is no definite rise in connection with it.

In the course of the above analysis, we have seen that, after Enteric Fever has risen in autumn, it pursues a different course in different years. May it not be that the mean of 10 years is not sufficient to give us a stable curve, and that we must be careful in drawing conclusions as if it were ?

To see how far there may be instability, we take the mean of the years 1891-92-93-95 and 96, 1897-1901, and 1902-1906.

We get, for the last 26 weeks of the year, the following number of cases of Enteric Fever, commencing :—

No. of the week	27	28	29	30	31	32	33	34	35	36	37	38	39
1891-1896 ...	29	39	38	36	47	48	53	76	69	83	86	71	85
1897-1901 ...	8	12	18	27	34	44	52	55	86	69	64	76	87
1902-1907 ...	25	17	21	31	34	26	33	35	33	40	51	65	73
Total....	62	68	77	94	115	118	138	166	183	192	201	212	245

No. of the Week ...	40	41	42	43	44	45	46	47	48	49	50	51	52
1891-1896 ...	96	80	99	93	105	95	85	94	71	63	49	48	36
1897-1901 ...	87	108	73	74	63	50	62	60	65	62	48	47	45
1902-1907 ...	56	57	53	56	61	34	50	32	43	37	40	36	31
Total....	239	245	225	223	229	179	197	186	179	162	137	131	112



We thus see that five yearly periods by no means give a stable curve. In the first five-yearly period we get the greatest incidence in the 42nd to the 45th week; in the second from the 39th to the 41st week, with the maximum in the last-named; in the third in the 38th and 39th week.

Thus, as the disease declines, the maximum period recedes from the end of the year, and the character of the curve changes. Further, the curve is altered by the inclusion of the first five years, a steady progression being thus produced from the 29th to the 39th week, which is more in accord with the hypotheses' which we have considered in connection with this portion of the rise.

The most striking example of a change in the annual course of the disease is seen in the Hamburg curve, prepared by the late Dr. Reincke, the apex of the curve in the period 1820-1871 falling in September, in 1872-1896 at the New Year.

It is true the character of that curve is determined by the character of the Elbe as a source of drinking water, and one or two outbursts in early spring might derange the curve.

At the same time, it is evident that the Enteric curve is not a stable one for short periods, and for long periods so many changes have occurred that the factors producing the annual course of the disease may have changed.

There can, in fact, be no doubt that the number of overlooked cases in any year may greatly modify the course of the disease, and to a less extent this is true of shell-fish infection. Both these factors are only partially dependent on the period of the year.

It would seem, then, that an ideal curve of Enteric Fever is not to be attained simply by the accumulation of years, and that we may learn more from close observation than from such data.

We have so far considered only the opportunities for infection, but it is necessary also to enquire whether, perchance, the body of the patient is more receptive of the disease at the period of the year when the rise of the disease is most acute? Does the previous extensive outbreak of Diarrhœa prepare the soil for an attack? In order to consider this question, I have had a statement taken out by Mr. Hewitt of the previous condition of patients investigated by him in 1905. The numbers who have previously suffered from bad health is considerable. In not one is there a history of previous illness from Summer Diarrhœa. There are two or three instances, however, in which consumption of shell-fish has been forthwith followed by Diarrhœa, with subsequent development of Enteric Fever. Apart from these, there is no precedent history of Diarrhœa, nor is there any special association with previous bad health in autumn.



We may reject any influence of Diarrhœa on the system in producing Enteric Fever in the autumn. The question of seasonal predisposition is not so readily disposed of. The relative amounts of excretion by the skin, kidneys, and lungs must cause seasonal changes in the constitution of the blood, which may have an important bearing on the incidence of particular diseases at different seasons. This is, however, a *terra incognita* at present. This subject is probably of special importance in connection with Pneumonia, but may have a bearing on many diseases.

We have, also, not taken into consideration the possibility that the infecting person may be influenced by season.

Considering the high degree of infectivity which we have found to attach to cases of Enteric Fever in the late autumn and winter, it is not likely that this is a factor which enters materially into the autumnal rise of the disease.

We may now bring together the facts and suggestions which we have already considered :—

1. Enteric Fever increases somewhat rapidly in autumn, and declines slowly during the rest of the year with slight pauses.

2. It is the increase in autumn by which it is mainly sustained.

3. In many years this increase occurs in a peculiar manner. An abrupt rise takes place in some one week, usually somewhere about the 35th. A second rise occurs later, somewhere about the 38th week. These rises are in general sustained, and the disease only slowly recedes as the season advances.

4. When individual cases of the disease are carefully investigated, it is found that they are liable to occur in nests round one or more overlooked cases. These nests may include one or several households. The overlooked attack plays an important part in these occurrences. Overlooked attacks are especially liable to occur in children. In 1905 between one-half and one-third of the cases were traced to contact with previous cases, with a high degree of probability.

5. In that year about one-fourth of the cases were in association with previous consumption of shell-fish, chiefly mussels. What proportion owed their attack to this cause it is difficult to say. But the general facts appear to indicate that the proportion is not inconsiderable.

6. The rise in summer and autumn is probably in part due to transmission of infection by flies, and it may be that the rise up to the 38th or 39th week is largely due to this agency, swarming, as they do very often, in enormous numbers in houses. That part of the increase which is preliminary to what I have called the critical rise of Enteric Fever may be specially connected with direct transmission by house-flies. One has

been inclined to ascribe the long period elapsing between the increase of house-flies and of Diarrhoea deaths, on the one hand, and the increase of Enteric cases on the other, to the interposition of overlooked cases. But, while one must not entirely put aside the influence of soil, one must also not disregard other possibilities which might explain the critical rise. Thus, more than one species of beetle preys on the eggs and pupæ of flies, spiders (as Dr. Hamer has pointed out) prey on flies, and it is possible that some species of flea is fostered by the house-fly. Some such intermediate agency might be shown, hereafter, to have to do with the critical rise.

7. But, with the favourable conditions of temperature which then prevail, infection probably often attaches to food, and even grows thereon, without the transmitting agency of flies, such food, for example, as raw fruit.

8. In the Diarrhoea season, there will be an increase of overlooked cases, and overlooked cases are specially potent in spreading Enteric Fever by direct infection. They will be equally so if flies also transmit infection. In fact, such overlooked cases in association with Diarrhoea have been discovered.

9. The ascent of the curve after the 39th week cannot readily be explained in these ways, although it is to be remembered that even with a smaller number of flies the material of infection is now much more abundant.

10. Shell-fish undoubtedly play some part in reintroducing Enteric Fever into Manchester, and in sustaining its incidence. The effect of shell-fish is most acute about the end of September, but may be exerted at any period of the year, except perhaps from May to August.

11. Overlooked cases are probably in greatest abundance from the 31st to the 36th week, when they will probably exceed in number the known cases.

12. The condition of the soil cannot be excluded as a factor. In recent years, owing to very extensive house draining and conversion of privies to water-closets, the condition of the soil must have greatly improved.

13. The analysis of cases according to age and occupation points to the accumulation of local foci of infection in autumn, due, it may be, to the increase of cases at first conditioned by flies, but determined by the increase of cases, and especially of overlooked cases. Such foci would appear to lose their virulence very slowly.

14. Holidays exert an influence, especially towards the end of August and early in September, when slight attacks of Enteric Fever are liable to be concealed. This influence has not been traced, however, in individual



cases to an extent which would justify one in asserting a large effect from this cause.

15. The abrupt rise in a particular week is difficult to explain, and, in fact, cannot be said to be satisfactorily explained. Only careful study of individual cases in the period immediately preceding its occurrence can throw light upon it.

16. In whatever way season affects Enteric Fever in Manchester, it is chiefly by the intensification of local infective processes.

The measures specially indicated by the known facts are :—

(a) The abolition of pail and midden privies.

(b) Effectual drainage of houses and their environs.

(c) The protection of food stuffs from the visits of the house-fly, whether at home or in shops.

(d) The storage of manure and vegetable refuse in such a manner as to prevent, as far as practicable, the multiplication of house-flies. The same object requires the abolition of pails and middens.

(e) If practicable, tips for domestic refuse should be replaced by destructors.

(f) Control should be exercised by some central authority over shell-fish layings, and close inspection of shell-fish after arrival should be exercised. All wholesale dealers should be required by law to keep records of any consignment of shell-fish, showing the amounts, source, and persons to whom sold. Hawkers of shell-fish should be required to have their names and addresses shown conspicuously on their carts.

(g) An effort should be made to stop the consumption of raw mussels.

(h) Greengrocers and hawkers should receive instructions as to the modes in which food may be contaminated. It would be well, also, if the public could be instructed as to the necessity of thoroughly cleansing raw fruit and vegetables before consumption.

(i) Sanitary Inspectors and Health Visitors might usefully draw the attention of householders to the necessity of treating all attacks of Diarrhœa as dangerous infectious diseases, and of taking the precautions consequent on this view.

(k) No opportunity should be lost of impressing on the medical practitioners the ease with which slight attacks of Enteric Fever escape attention, and of the need for exercising special vigilance in detecting cases.

(l) The most important measure of all is the continuous, careful, and adequate investigation of all individual cases of the disease, with such action consequent thereon as the law may permit.



PART II.

The facts for 1907 not already given are contained in the following tables.

Table 1 shows the number of cases occurring in weeks according to the date of onset. There is no rise in this year until the 39th week, and no sustained rise until the 47th week. This agrees with the course of epidemic Diarrhœa.

1.—ENTERIC FEVER ATTACKS IN WEEKS REPORTED IN 1907, ACCORDING TO DATE OF ONSET.

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER	
Jan. 5	5	Apl. 6	2	July 6	7	Oct. 5	3
„ 12	5	„ 13	5	„ 13	1	„ 12	10
„ 19	3	„ 20	2	„ 20	1	„ 19	6
„ 26	2	„ 27	2	„ 27	3	„ 26	6
Feb. 2	2	May 4	3	Aug. 3	2	Nov. 2	6
„ 9	2	„ 11	6	„ 10	2	„ 9	10
„ 16	...	„ 18	3	„ 17	4	„ 16	7
„ 23	2	„ 25	3	„ 24	3	„ 23	13
Mch. 2	7	June 1	4	„ 31	2	„ 30	12
„ 9	2	„ 8	4	Sept. 7	1	Dec. 7	11
„ 16	3	„ 15	3	„ 14	4	„ 14	28
„ 23	2	„ 22	...	„ 21	2	„ 21	20
„ 30	4	„ 29	3	„ 28	7	„ 28	15
Total...	39	Total...	40	Total...	39	Total...	147

City Total ... .. 265

Table 2 shows the mean rate of attack for the five previous years and for 1907 in twelve notification towns and in Manchester. It will be seen that in 1907 there was a marked fall in the attack-rate of Enteric Fever both in one and the other.

2.—ENTERIC FEVER ATTACKS, 1907.—RATES PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean 1902-6	Mean 1897- 1904	1907
Twelve Notification Towns	1·01	0·81	0·71	0·61	0·34	0·70	...	0·48
<b>City of Manchester</b> ...	0·69	0·70	0·58	0·59	0·65	0·64	0·67	0·41
Manchester Township ...	0·80	0·77	0·82	0·66	0·73	0·76	0·82	0·50
North Manchester .....	0·85	0·59	0·56	0·58	0·77	0·67	0·79	0·32
South Manchester .....	0·52	0·73	0·47	0·55	0·53	0·56	0·55	0·43

The next table gives the usual figures for the Sanitary Districts. There is relatively a great fall in Bradford district, West Gorton, Rusholme, Beswick, Newton, Moston, Harpurhey, and Blackley, corresponding possibly to diminution of midden privies. But it is better to wait and see whether the facts remain such as to justify this assertion.

3.—ENTERIC FEVER, 1907.—NUMBER OF ATTACKS IN DISTRICTS, WITH ATTACK RATE, CASE FATALITY PER CENT., AND REMOVALS TO HOSPITAL PER CENT.

DISTRICTS	ATTACKS	ATTACK RATE PER 1,000 LIVING	† CASE FATALITY PER CENT.	REMOVALS TO HOSPITAL PER CENT.	MEAN ATTACK RATE 1897-1904.
Ancoats .....	26	0·60	15·4	84·6	0·79
Central.....	7	0·27	28·6	85·7	0·74
St. George's.....	30	0·52	16·7	83·3	0·88
Cheetham .....	14	0·34	7·1	28·6	0·58
Crumpsall .....	3	0·32	33·3	66·7	0·56
Blackley .....	1	0·10	...	...	0·61
Harpurhey.....	4	0·18	...	25·0	0·88
Moston.....	4	0·21	...	75·0	0·48
Newton Heath.....	14	0·36	21·4	50·0	0·90
Bradford .....	11	0·44	18·2	90·9	1·05
Beswick .....	4	0·32	...	100·0	0·95
Clayton .....	7	0·52	14·3	71·4	0·99
Ardwick .....	19	0·42	21·1	78·9	0·71
Openshaw .....	18	0·62	5·6	55·6	1·01
Gorton (West).....	18	0·56	16·7	44·4	1·05
Rusholme and Kirkman.	4	0·15	...	25·0	0·38
Chorlton-upon- Medlock	19	0·34	15·8	36·9	0·46
Hulme .....	45	0·71	8·9	68·9	0·69
Moss Side.....	17	0·60	11·8	41·2	...
<b>City of Manchester..</b>	<b>265</b>	<b>0·41</b>	<b>13·6</b>	<b>63·4</b>	<b>0·67</b>

† Corrected ; the fatal cases are those actually occurring amongst the cases notified.

Table 4 shows the distribution of the disease according to age.

4.—ENTERIC FEVER.—NUMBER OF ATTACKS, OF DEATHS, AND CASE FATALITY PER CENT. AT DIFFERENT AGES, FOR THE THIRTEEN YEARS 1894-1906, AND FOR 1907.

AGES	1894-1906			1907		
	ATTACKS	DEATHS	CASE FATALITY PER CENT.	ATTACKS	DEATHS	CASE FATALITY PER CENT.
Under one year ...	8	2	25·0	1	...	...
1 to 2 years ...	32	6	18·8	4	...	...
2 to 3 „ ...	60	6	10·0	4	...	...
3 to 4 „ ...	90	10	11·1	2	...	...
4 to 5 „ ...	111	11	9·9	2	...	...
5 to 6 „ ...	131	14	10·7	3	1	33·3
6 to 7 „ ...	130	12	9·2	4	...	...
7 to 8 „ ...	120	9	7·5	4	1	25·0
8 to 9 „ ...	144	14	9·7	3	...	...
9 to 10 „ ...	121	11	9·1	7	2	28·6
10 to 15 „ ...	766	88	11·5	19	...	...
15 to 20 „ ...	871	163	18·7	40	5	12·5
20 to 25 „ ...	898	189	21·1	36	4	11·1
25 to 35 „ ...	1194	273	22·9	86	14	16·3
35 to 45 „ ...	539	154	28·6	27	5	18·5
45 to 55 „ ...	240	76	31·7	16	3	18·7
55 to 65 „ ...	73	32	43·8	7	1	14·3
Over 65 „ ...	20	10	50·0	...	...	...
All ages .....	5548	1080	19·5	265	36	13·6

The next table permits of a comparison of the death-rate from Enteric Fever, in 1907 with that of England and Wales, London, and Dublin ; also between the death-rates in the main divisions of the City. The death-rate is lower than that of the country generally, but higher than that of London. It is highest in the Manchester Township. It is, however, considerably lower than in other previous years.

5.—ENTERIC FEVER MORTALITY, 1907. RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean	1907
England and Wales .....	0·13	0·10	0·09	0·09	0·09	<b>0·10</b>	0·07
London .....	0·13	0·09	0·06	0·05	0·06	<b>0·08</b>	0·04
Dublin .....	0·33	0·24	0·19	0·16	0·16	<b>0·22</b>	0·11
<b>City of Manchester</b> .....	0·12	0·17	0·12	0·09†	0·14†	<b>0·13</b>	†0·06
Manchester Township .....	0·12	0·16	0·15	0·12	0·16	<b>0·14</b>	0·09
North Manchester.....	0·11	0·15	0·11	0·07	0·11	<b>0·11</b>	0·05
South Manchester.....	0·12	0·18	0·11	0·09†	0·16†	<b>0·13</b>	†0·05

† Exclusive of Moss Side and Withington.





The intervals between consumption of shell-fish and onset of symptoms may be classified thus :—

	Cases
Less than 10 days .....	2
10 days .....	7
11 „ .....	7
12 „ .....	9
13 „ .....	9
14 „ .....	11
15 „ .....	10
16 „ .....	4
17 „ .....	0
18 „ .....	1
22 „ .....	1
Indefinite (frequent consumption) .....	3
Uncertain .....	3
	<hr/> 67

As regards the wholesale dealers, these were traced only partially in the second, third, and fourth quarters, and designating them as A, B, C, D, E, we get as follows :—

Cases in Quarters	A	B	C	D	E	F	G	H
Second Quarter ....	3	2	1	..	..	1	..	..
Third Quarter .....	2	2	1	1	..	1	..	..
Fourth Quarter ....	13	5	6	4	3	..	1	1
	18	9	8	5	3	2	1	1

As regards the layings :—

In the second quarter these were traced thus: Dundalk alone 1, Dundalk with Creetown 2, Dundalk and Dalbeattie 1, O'meath 1, Morecambe 1, Cleethorpes 1; eaten there.

Third quarter: Dundalk alone 3, Dundalk and Dalbeattie 1, Carnarvon or Creetown 1, O'meath 1, Cleethorpes 1; eaten there.

Fourth quarter: Conway 14, Parkgate 3, Dundalk 3, O'meath 1.

In many cases information was not given.

As previously mentioned, the cases associated with shell-fish tend to arrange themselves in little groups. But this does not necessarily imply more than that large supplies are on the market from special layings.

It will be seen that a much smaller proportion of cases has been traced to direct infection in 1907 than in 1905. This is owing chiefly to the fact that it was found impossible to give the necessary time to make a full investigation in the majority of the cases.

Other interesting points arise in connection with individual cases, but I will give only the history of case 130, ascertained by Mr. Hewitt.

Case 130. " Inspector Hewitt reports visiting on November 23rd, 1907, in connection with this case of Enteric Fever. The patient, age 19 years, had Enteric Fever 16 years ago, and at that time his father and mother also had this disease.

" The history of the present illness is as follows :—On September 7th or 8th he was shivery, and had pains in the head and at the bottom of the back. The bowels were costive. He remained off work from September 10th to 17th, but had no other pains, and his appetite was fair, so he returned to work from September 18th to 25th. On the latter day the patient collapsed whilst at work, the pains in the limbs became much worse, with sweating and shivering. A doctor was called in on September 26th, when the patient was too weak to get out of bed, and now had sore throat. There was delirium on the following day, and on September 28th a sample of blood was taken for bacteriological examination. This gave a negative result. The patient was removed to Monsall Hospital, where the illness was diagnosed as Enteric Fever.

" The following history of previous illnesses in the same house was obtained :—

" A. W., æt. 28 years, commenced with Enteric Fever on May 2nd, 1906; the blood test was positive; death took place on June 14th, 1906.

" A. A., æt. 28 years, commenced with Enteric Fever about September 4th, 1906; blood test positive; death occurred October 16th, 1906.

" These persons were lodgers, and the landlady (Mrs. W.) has suffered from periodical attacks of abdominal pains and vomiting since 1893.

" In 1893 she had Influenza and Debility, followed by Pneumonia, for which she was treated in Withington Workhouse for five weeks. Her recollection of this illness is not quite clear, but she remembers having headache, severe pains in the back, and was informed that she was delirious. Since this illness she has suffered from periodical attacks of abdominal pain and vomiting. These attacks formerly occurred every seven days, but latterly the interval



has been only three or four days. During an attack which lasts from a few to 24 hours, the patient's feet are cold, the urine is like blood, and relief is obtained after vomiting. Purgatives are regularly taken.

"In connection with the illness of Mrs. W., there is a history of other illnesses in persons residing at another house let in lodgings by her, viz. :—

"A. P., æt. 25 years, onset of Enteric Fever April 8th, 1905; blood test positive.

"H. R., æt. 19 years, onset of Enteric Fever May 20th, 1905; blood test positive.

"This case was apparently infected outside Manchester.

"A daughter of A. P. had an illness suspicious of Enteric Fever, but a blood specimen could not be obtained.

"Mrs. W's husband, æt. 64 years, had tubercular abscesses in his side, and continuous Diarrhœa and sickness set in seven days before death, which occurred on May 17th, 1906.

"Careful enquiries have been made concerning the health of the remaining lodgers, three of whom were ailing.

"Enquiries were made as to the consumption by the patient 130 of shell-fish, fruit, etc., but no suspicion is attached in this case to this possible source of infection.

"The sanitary condition of the house is satisfactory.

"After the occurrence of the various attacks of Enteric Fever mentioned, disinfection of rooms, closets, clothing, etc., has been carried out by the Corporation. A sample of blood serum from Mrs. W. gave a negative reaction."

It may be said generally that the cases do not differ widely in their histories from those previously given; and that where a high proportion are traced, this is owing to the possibility of using Mr. Hewitt's services, in addition to those of the District Inspector.

The histories of infection have been classified according as the attack in the originating case was or was not well determined.

Well-established sources were ascertained in 35 instances, of whom a number were overlooked. In 25 instances these gave a +ve reaction to the serum test, in none a negative reaction, and in 10 no test was obtained.

Sources whose attacks were not well determined numbered nine.

The following table shows the Enteric Fever attacks in time and place during 1907:—

1907.—ENTERIC FEVER ATTACKS IN MONTHS ACCORDING TO DATE OF ONSET.

STATISTICAL DIVISIONS		January	February	March	April	May	June	July	August	September	October	November	December
Ancoats .....	{ +	••	•	•	•	•	•	...	••	...	•	•••••	•••••
	{ † o	...	...	...	...	†	...	...	...	...	•	•••••	•••••
Central .....	{ +	...	•	...	...	...	...	...	•	...	•	•	••
	{ † o	...	...	...	...	...	...	...	...	...	...	•	...
St. George's .....	{ +	•••	••	...	...	••	•	...	...	...	•••	•••••	•••••
	{ † o	...	...	...	...	...	...	...	...	...	...	•••••	•••••
Cheetham .....	{ +	...	...	...	•	...	••	...	...	...	•	•••••	••
	{ † o	...	...	†	...	...	o	...	...	...	...	...	†
Crumpsall .....	{ +	...	...	...	...	...	...	...	...	...	...	...	•
	{ o †	...	...	...	...	†	...	...	...	...	...	...	†
Blackley .....	{ +	...	...	...	...	...	•	...	...	...	...	...	...
	{ † o	...	...	...	...	...	...	...	...	...	...	...	...
Harpurhey .....	{ +	...	...	...	...	...	...	...	...	...	•	•	...
	{ † o	...	...	†	...	...	...	...	†	...	...	...	...
II. Moston .....	{ +	...	...	...	...	...	...	...	...	...	••	•	...
	{ † o	...	...	...	...	...	†	...	...	...	...	...	...
Newton .....	{ +	...	...	•	...	...	•	•	...	•	•••	•••••	•
	{ † o	...	...	...	...	...	...	...	...	...	...	o	...
Bradford .....	{ +	•	•	•	•	•	•	...	...	...	•••	•	...
	{ † o	...	...	...	†	...	...	...	...	...	...	...	...
Beswick .....	{ +	...	...	...	•	...	...	•	...	...	•	...	•
	{ † o	...	...	...	...	...	...	...	...	...	...	...	...
Clayton .....	{ +	...	•	•	...	...	...	•	...	...	•	...	•
	{ † o	...	...	...	...	...	...	...	†	...	...	†	...
Ardwick .....	{ +	•	...	•	...	...	...	...	...	•	•	••	•••••
	{ † o	...	...	...	...	†	...	...	†	...	...	...	...
Openshaw .....	{ +	...	...	...	...	•	••	••	••	•	...	•	•••••
	{ † o	...	...	o	...	...	...	††	...	†	...	...	†
West Gorton .....	{ +	••	•••	...	...	...	...	...	...	...	••	••	•••••
	{ † o	...	...	...	...	...	...	†	†	...	...	...	††
II. Rusholme and Kirkmanshulme .....	{ +	...	...	...	•	...	...	...	...	•	•	...	•
	{ † o	...	...	...	...	...	...	...	...	...	...	...	...
Chorlton-upon-Medlock .....	{ +	•	...	...	•	•	...	...	...	...	•••	•••	•••
	{ † o	††	...	†	...	...	...	†	...	†	†	...	...
Hulme .....	{ +	•••	•	...	•	•••	••	...	•	•••••	o•	•••••	•••••
	{ † o	†	...	...	†	††	...	...	†o	†	...	††o	...
Moss Side .....	{ +	...	...	...	••	•	...	••	...	...	•	••	•
	{ † o	...	...	††o•	o	...	...	†	...	...	...	†	†

Bacteriological result.

• Positive.

† Negative.

o None taken.





## MEASLES.

Measles is by far the most formidable disease of childhood after the first year of life has been passed. Your Medical Officer of Health has written and presented a number of reports on this disease, and it appears useless at the present time to treat of Measles at any great length. Yet, for a proper understanding of the subject, no short account will suffice. Reference is made, therefore, to previous annual reports for a discussion of different points, and especially to the Annual Report for 1903. Only a few practical matters will be discussed here.

In the first place, although the average death-rate from Measles since the year 1900 has been low compared with the death-rate in the five years 1895 to 1899, signs are manifest of a tendency in this disease to become again more formidable in Manchester.

The great majority of the deaths from Measles occur within the first three weeks after the commencement of illness, and it would appear to be manifest that these are due mainly to the intensity of the infection, an important point when we come to consider how much is to be expected from isolation in hospital.

The most serious element in Measles is, probably, not the number of deaths which occurs during the illness, but the susceptibility induced to attacks of Tuberculosis. In this respect, the high fatalities in Manchester from Diarrhœa, Measles, and Whooping Cough are answerable, without a doubt, for a considerable share in the high death-rate from Tuberculosis. Moreover, another serious consequence of Measles is the considerable number of cases of ear disease which ensue upon attacks.

No material abatement in the mortality from Measles is manifest within the last 50 years. The disease is highly infectious in the early stage for some days before the eruption shows itself. At this stage it is often exceedingly difficult to detect, and consequently no precautions are taken. It appears to parents simply as a catarrh, perhaps not a severe one, but on each act of coughing the air is filled with a cloud of infective particles.

When the child affected has been attending a school, where it has contracted the disease, the parents have usually had no reason to suspect any danger, and consequently take no precautions against the communication of the disease to other children until it is too late.

Owing to its high infectiveness in the early stages, the disease spreads rapidly among children who are gathered together for any reason. It sweeps, frequently, through the infant departments of schools, whether elementary or other. Classes of older children are usually much less affected, owing, doubtless, to

the high proportion of such children protected by a previous attack. These children do not themselves sustain a high mortality, but they carry the disease home, and communicate it to their younger brothers and sisters, who are much more severely affected,—partly because they are younger; partly in all probability, because, having acquired the disease at home from another child in a confined space, they have received a high dose of infection.

If the younger scholars escaped, they would be liable to the disease later on, as the experience of public schools shows.

It would, therefore, not be a sufficient safeguard against a high fatality from Measles to save the infant classes of elementary schools from severe incidence, unless precautions were equally taken against its spread in schools at higher ages. No argument, therefore, in favour of closing infant schools can be derived from any supposed advantage to education.

On the other hand, education and health are necessary partners. It would be false economics and bad administration to pursue a system of education founded on the hypothesis that it is matter of indifference in the educational result whether a child comes to school well or ill, crippled by Measles or Whooping Cough, or otherwise. Nor does it matter at what age the mischief has been done, whether at the age of two or at the age of five. The supreme object of the educational system of the country should be to co-operate with the Sanitary Authorities, central or local, to ensure that children are well cared for, properly guarded from disease, and well, when the systematic training of their mental faculties commences.

No system of education, however skilful, can prevent such training, unless it be entirely illusory, from being a strain on the child. Education is not teaching. Unless the child learns to put forth effort, and to face squarely and overcome difficulties, the labour bestowed upon him will have been largely in vain. To put forth such effort, however, the child must be kept in good health, and guarded, as far as practicable, from disabling illness.

Your Medical Officer of Health has shown that, when Measles has reached the point in the infant department of schools at which 10 per cent. of the scholars have been attacked by Measles, it suffices in general to close that department to arrest the spread of Measles in the school. There is, in general, no revival of the disease after the class reassembles. Nor is the attendance diminished on reassembling, as has been alleged, for more than a very brief period. It is, of course, necessary also to close Sunday schools in the neighbourhood, and to warn other schools against admitting children who have been excluded from the particular school in which the department has been closed.



When these precautions have been taken, it is probable that the closing of the infant department is a protection not only to the school concerned, but also to others in the neighbourhood. The gravity of the disease is also impressed on the parents. There appears to be no sufficient reason why the teachers in elementary schools, when thus thrown out of teaching, should not visit the homes of the children affected, and give instructions to parents as to the precautions to be adopted.

The arguments against closing the infant departments of schools are such as these :—

*The disease is not arrested outside.* (“The children liberated from school carry the disease to other houses, and to other children with whom they play, and it spreads all the same.”) No doubt, to some extent this is true. But only to a comparatively slight extent. Outbreaks of Measles have been suppressed by closing all the schools of a district, a course of action which one by no means advocates. But, if such is the case, what becomes of the argument that, on closing the infant departments of schools, the disease spreads outside. The effect of holidays in diminishing Scarlet Fever and Diphtheria is most manifest.

Another argument is that poor children are more injured by being left uncared for outside school than they are benefited by being protected from Measles. Here, again, there is some element of truth in the contention. This is, however, an argument which tells rather against the continuance of middens, pail-closets, dirty refuse methods, bad drainage, and dirt generally, than against the closure of schools. Else, how about holidays? How injurious to the children of the City must be the four holidays in the year, to which they look forward so eagerly.

There are other arguments against closing infant departments. One is this : The Education Department now furnishes to the Medical Officer of Health, daily, the names and addresses of scholars in different schools who are known to be suffering from Measles. These are visited by the Sanitary Inspectors, and are instructed in the precautions to be taken. If the departments are closed, it is said, fresh cases occurring will escape attention, no instruction will be given, and no precautions will be taken. That is true. But, of course, on the reassembling of the scholars, any case overlooked will be brought to light, and no great harm ensues from this cause.

Another argument is that some poor children are thus deprived for three weeks of the protection, and perhaps nourishment, which they are getting from the Education Department. There are, no doubt, some partial drawbacks, but these are, in my opinion, outweighed by the protection afforded generally to the children attending particular schools, at an age when their liability to pulmonary injury is still very great, by the closure of the department chiefly affected.



All this, it may justly be said, is an argument for closing these departments, not when 10 per cent. has occurred, but when only one case has occurred. It must be admitted that this is an incontestable position. There is but one objection to it: that it may involve the closure of the department not for one period of three weeks, but for two or more such periods. To those who maintain that, considering the risks to which they are exposed, children should not attend school until they are seven years of age, this difficulty will not appear of great moment. In the case of private schools it is the course pursued, apparently with much benefit. Moreover, at such schools parents are promptly informed of the occurrence of cases, so that they may be alive to the risks, and so that, if for any reason the school is not closed, they may remove their children for a reasonable period. Apparently the interruption to education is not considered by such parents as outweighing the risk of infection.

In keeping open the infant department of a school invaded by Measles or Whooping Cough, without any information being given to all the parents concerned of the occurrence of these diseases in the department, the Education Authority is taking up the responsibilities of the parent. It is not suggested that it should not do so, but the fact that such is the case appears to impose some limitation on the risks which ought to be run.

It appears to me that when it is quite clear that Measles has definitely taken hold of an infant department of an elementary school, that department should be closed.

Nevertheless, experience has shown that this is not sufficient to arrest the spread of Measles outside the schools, though it may delay it, and we have to ask ourselves what more can be effected?

The absence of any legal power for dealing with the disease is the most serious barrier to effectual action. Moreover, the law relating to notifiable infectious disease is seriously defective, inasmuch as it makes no provision against admitting into the sick room children from another family, an offence only too common in Lancashire households.

If Measles were made notifiable, legal proceedings would certainly have to be instituted to enforce compliance, since it has been estimated that only one-half of the cases are attended by a medical practitioner. The expense of notification would be very great, and could not well come under £1,500 per annum. Moreover, a staff of inspectors would be required adequately to deal with the cases notified. Less than six would not suffice. There would be much work to do. It would be necessary to see that the children received as much isolation as the house would permit, and that all possible care was taken of them in the way of isolation, ventilation, good fires, suitable bedclothes, and so forth. Glasgow alone, so far as I know, has met this question by providing a large hospital for the reception of cases of Measles from poor homes.

The need for such provision is, no doubt, especially acute in that city. But, in every city, many cases occur in which the occurrence of several cases of Measles introduces very distressing elements into the family life, besides placing the poor children attacked under conditions peculiarly adverse to a favourable issue or to entire recovery. We thus see that the rapid spread of Measles through the infant department of a school in a poor part of the City may be a specially unfortunate event, and that the closing of a school may be quite as needful for such a school as for one which receives the children of people who are somewhat better off.

Supposing, again, Measles was made a notifiable disease, daily notification of the occurrence of cases occurring in the schools would still be as necessary as ever.

Supposing we remain content to know only so much of Measles as comes to us by way of the schools, much might be done by means of an adequate staff, which could also ascertain the existence of cases other than those notified from the schools.

Such a staff would have abundance of work at all seasons of the year.

The following is a statement prepared by Mr. Ellwood of the work now being carried on in connection with Measles and Whooping Cough. Valuable as this work is, there is not time for the Sanitary Inspectors to insist on suitable arrangements at houses invaded by Measles, if they had the power :—

#### WORK AT PRESENT CARRIED OUT IN CONNECTION WITH THE OCCURRENCE OF MEASLES AND WHOOPING COUGH IN SCHOOLS.

To enable the Public Health Office to become cognisant of Measles and Whooping Cough immediately school children are attacked, the Education Authority has for many years notified the Medical Officer of Health by post-card of all cases coming to the knowledge of the School Attendance Officers in the course of their daily work.

At the commencement of the year 1908, the scheme which had been in operation for some years was somewhat modified.

The following are now the rules for controlling these diseases :—

1. Children suffering from Measles must not go to school for one month from the appearance of the rash, and in cases of Whooping Cough till the “ whoops ” have ceased.

2. All children, not suffering from Measles or Whooping Cough, attending the infant department must be excluded until three weeks have elapsed from the commencement of illness of any case which may occur in the house.



3. Children attending classes above the infant department, who have had Measles or Whooping Cough, may continue at school if isolation is good.

4. Children attending classes above the infant department, who have not had Measles, are at liberty to attend school, although isolation is bad.

5. Children attending classes above the infant department, who have not had Whooping Cough, *must not* go to school, if isolation is bad, unless under some exceptional circumstances.

Lists of cases of Measles and Whooping Cough are received from the Education Authority daily. These are forthwith entered on special enquiry forms, and handed to the Sanitary Inspectors the following morning.

The Inspectors call at the homes of the children and explain the printed instructions, at the same time warning the parents not to allow the patients to come in contact with other children. Isolation and ventilation are also enquired into.

The parents are warned against nursing their sick children in the kitchen ; but in 90 per cent. of the cases nursed in the poorer districts of the City, isolation is undoubtedly not carried out, the home circumstances not permitting this to be done.

Any sanitary defects found by the Sanitary Inspectors are attended to as soon as possible, and it is surprising what a large proportion of the houses are now stated to be in a good sanitary condition. This follows as a matter of course, considering the good work done for so many years by the Sanitary Committee in putting the houses of the City in a good sanitary condition.

The new scheme is now working smoothly. There is no doubt that the cases are visited earlier by the Sanitary Inspectors than under the old system. This is imperative, as the notices for the exclusion of children are now served by the Sanitary Inspectors, and the notices on the Education Authority are served from the Public Health Office.

The scheme has laid extra work on the Sanitary Staff, and has considerably increased the work of the staff in the Public Health Office, now that the notices for the exclusion or otherwise of children from school are served direct on the Education Authority. These notices must be issued without delay. During the month of May, 1908, about 850 notices were served on the Education Authority.

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The following tables will make clearer some of the points mentioned.

Table 1 shows the number of deaths which have occurred at different ages over a long series of years.



The disease begins to be very fatal in the second half-year, and the largest number of deaths occurs in the second year of age. The number of deaths is still considerable, however, at age four.

TABLE I.  
DEATHS FROM MEASLES IN THE CITY OF MANCHESTER.

Under One Year				Years of Age				Total 5 Years and upwards
Years	Under 3 Months	3-5 Months	6-11 Months	1	2	3	4	
1895- 1906 }	24	82	999	2020	879	475	230	235
1907	...	6	48	92	36	22	15	10

Table 2 shows the annual course of Measles in the City of Manchester. It is least fatal in the fourth quarter, and most fatal usually in the second, though in 1903 the first quarter was most severely visited.

The annual course of Measles may be seen from the number of deaths occurring in successive quarters as given below:—

TABLE 2.

YEAR	1st Quarter	2nd	3rd	4th
1902 .....	67	68	60	47
1903 .....	158	104	54	29
1904 .....	100	189	83	53
1905 .....	41	99	77	13
1906 .....	60	266	118	32
1907 .....	51	73	50	55

In connection with this, we may also consider Table 3, showing the number of cases of Measles notified from the schools day by day, collected in weeks. The total number notified in 1907, it will be seen, was 3,639, while the total

number of deaths was 229. If we put the case mortality at 3 per cent., a high estimate, more than half of the total cases were notified from the schools.

It will be observed that, after holidays whether long or short, the weekly number of notifications diminishes for some weeks.

TABLE 3.

MEASLES AND WHOOPING COUGH NOTIFIED BY THE EDUCATION AUTHORITY  
DURING THE YEAR 1907.

Date		Families	Children	Measles	Whooping Cough
January	5.....	Holidays	Holidays	Holidays	Holidays
"	12.....	176	204	79	125
"	19.....	66	84	17	67
"	26.....	57	59	18	41
February	2.....	53	60	15	45
"	9.....	66	68	27	41
"	16.....	74	78	37	41
"	23.....	107	111	57	54
March	2.....	189	218	128	90
"	9.....	174	181	118	63
"	16.....	169	187	121	66
"	23.....	161	175	85	90
"	30.....	97	112	47	65
April	6.....	Holidays	Holidays	Holidays	Holidays
"	13.....	376	389	229	160
"	20.....	183	200	88	112
"	27.....	160	185	90	95
May	4.....	160	171	86	85
"	11.....	170	179	115	64
"	18.....	188	214	119	95
"	25.....	Holidays	Holidays	Holidays	Holidays
June	1.....	233	243	168	75
"	8.....	153	192	103	89
"	15.....	130	147	103	44
"	22.....	153	180	118	62
"	29.....	121	131	95	36
July	6.....	174	202	141	61
"	13.....	184	202	135	67
"	20.....	166	194	142	52
"	27.....	} Holidays	Holidays	Holidays	Holidays
August	3.....				
"	10.....				
"	17.....				
"	24.....	216	225	78	147
"	31.....	71	71	23	48

MEASLES AND WHOOPING COUGH—*Continued.*

Date	Families	Children	Measles	Whooping Cough
September 7.....	70	79	26	53
„ 14.....	45	48	18	30
„ 21.....	54	58	30	28
„ 28.....	76	84	53	31
October 5.....	66	69	45	24
„ 12.....	81	104	82	22
„ 19.....	71	74	49	25
„ 26.....	87	91	64	27
November 2.....	68	71	46	25
„ 9.....	116	121	86	35
„ 16.....	126	141	105	36
„ 23.....	105	123	93	30
„ 30.....	107	120	86	34
December 7.....	102	107	84	23
„ 14.....	126	138	101	37
„ 21.....	94	104	89	15
„ 28.....	Holidays	Holiday	Holidays	Holidays
	5,721	6,194	3,639	2,555

1907.

*Cases notified by the Education Authority.*

5,721 Families affected.

6,194 Children suffering:

3,639 from Measles.

2,555 from Whooping Cough.

Table 4 shows the death-rates year by year from Measles and from all causes amongst children under five years of age. In three years the deaths from Measles in this age group exceeded 10 per cent. of the total, and in 1906 approached this figure:—

TABLE 4.—DEATH-RATES FROM MEASLES AND FROM ALL CAUSES  
UNDER 5 YEARS OF AGE.

	1892	1893	1894	1895	1896	1897	1898	1899
Measles ...	5·50	4·40	3·24	7·53	8·48	9·35	4·02	10·31
All causes ...	78·7	86·3	66·5	90·7	80·4	85·3	78·1	87·5

	1900	1901	1902	1903	1904	1905	1906	1907
Measles ...	3·66	4·29	3·51	5·13	6·24	3·10	6·31	2·99
All causes ...	78·3	74·5	64·7	69·5	75·8	59·2	66·6	56·2



TABLE 5.

A comparison of the mortality due to Measles with that caused by other zymotic diseases, and by Phthisis, is given in the following figures :—

No. of Deaths from ...	1891	1892	1893	1894	1895	1896	1897	1898	1899
Measles .....	220	369	293	222	505	567	628	271	699
Scarlet Fever... ..	114	130	140	116	173	198	124	65	46
Diphtheria .....	122	91	122	102	72	54	29	41	71
Enteric Fever.....	189	124	127	91	95	118	95	120	73
Smallpox .....	0	2	49	21	2	0	0	0	0
Whooping Cough .....	518	368	240	286	250	359	299	170	227
Diarrhoea, &c. ....	432	418	956	375	904	572	964	1090	1121
Phthisis .....	1117	1053	1060	1026	1139	1078	1139	1056	1117

No. of Deaths .....	1900	1901	1902	1903	1904	1905	1906	1907	
Measles .....	254	292	242	345	425	231	475	229	
Scarlet Fever .....	105	127	146	97	85	78	108	102	
Diphtheria .....	76	133	123	136	99	127	119	106	
Enteric Fever .....	75	75	66	93	66	55	83	37	
Smallpox .....	0	0	0	24	9	0	0	0	
Whooping Cough .....	371	224	242	213	280	195	193	314	
Diarrhoea, &c. ....	822	1019	296	507	761	729	981	291	
Phthisis .....	1135	1144	1145	1025	1106	988	1089	1092	

We thus see how greatly the mortality from Measles exceeds that from Scarlet Fever, Diphtheria, or Enteric Fever.

In 1897 and 1899 the deaths from Measles exceeded in number those from all these fevers, with Whooping Cough added.

From the following table we are able to compare the death-rate from Measles with that in England and Wales, in other towns, and in rural districts. Though higher than in England and Wales, and slightly higher than in London, it compares favourably for 1907 with the death-rate from other towns. The year is, however, a favourable one, as will be seen by comparing the means for five years, when the death-rate in Manchester is much the highest. It will be seen, also, that on the mean of five years the Manchester death-rate is much higher in the Manchester Township than in South Manchester, and much higher in South Manchester than in North Manchester. (See Table 6 on next page.)

From Table 7 we obtain a view of the death-rates in the different districts of the City in 1907, and for the years 1896-1905.

It will be seen that the highest death-rates are in the three districts of the Manchester Township: for North Manchester in Newton, Bradford, and Beswick; for South Manchester in Openshaw, West Gorton, and Hulme. The highest fatalities from Measles are determined, therefore, largely by social conditions, and correspond fairly closely with what is known as the sanitary state of the respective districts.

TABLE 6.—1907.—MEASLES MORTALITY.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean	1907
England and Wales .....	0·38	0·27	0·36	0·32	0·27	0·32	0·36
76 Great Towns .....	0·49	0·36	0·47	0·39	0·40	0·42	0·43
London .....	0·51	0·45	0·49	0·37	0·41	0·45	0·38
<b>City of Manchester</b> ...	0·44	0·62	0·76	0·40†	0·83†	0·61†	0·39†
Manchester Township ...	0·44	0·96	0·86	0·64	1·18	0·82	0·48
North Manchester .....	0·67	0·34	0·50	0·39	0·56	0·49	0·34
South Manchester .....	0·29	0·64	0·89	0·28†	0·85†	0·59†	0·38†
142 Smaller Towns .....	0·37	0·29	0·36	0·31	0·22	0·31	0·41
Rural Districts .....	0·27	0·17	0·23	0·24	0·14	0·21	0·25

† Exclusive of Moss Side and Withington.

TABLE 7.—1907.—DEATHS AND DEATH-RATES FROM MEASLES IN THE VARIOUS DIVISIONS OF THE CITY.

Statistical Divisions		Estimated Population	Deaths	Death-rate	Average Death-rate 1896-1906
<b>City of Manchester</b> .....		<b>643,158</b>	<b>229</b>	<b>0·36</b>	<b>0·66</b>
I. Manchester Township ...		126,622	61	0·48	1·07
II. North Manchester.....		192,312	66	0·34	0·59
III. South Manchester.....		324,224	102	0·31	0·51
I.	Ancoats .....	43,261	29	0·67	1·21
	Central .....	25,687	9	0·35	0·92
	St. George's .....	57,674	23	0·40	1·05
II.	Cheetham .....	41,700	5	0·12	0·32
	Crumpsall .....	9,369	2	0·21	0·28
	Blackley.....	9,715	3	0·31	0·38
	Harpurhey .....	22,131	9	0·41	0·61
	Moston .....	19,334	7	0·36	0·40
	Newton Heath .....	38,851	19	0·49	0·64
	Bradford .....	25,185	13	0·52	1·11
	Beswick .....	12,487	8	0·64	0·83
III.	Clayton .....	13,540	0	...	0·59
	Ardwick .....	44,797	16	0·36	0·67
	Openshaw .....	28,824	18	0·62	0·78
	Gorton (West) .....	31,926	14	0·44	0·74
	Rusholme and Kirk.....	26,684	3	0·11	0·35
	Chorlton-upon-Medlock..	55,988	13	0·23	0·48
	Hulme .....	63,353	32	0·51	0·78
	Moss Side .....	28,318	4	0·14	...
	Withington .....	44,334	2	0·05	...

The next table explains itself, and shows the number of schools in which Measles was very prevalent in 1907.

TABLE 8.

Showing the number of schools in the infant departments of which the percentage of scholars absent, at one time, on account of (suffering from?) Measles reached 10, 20, 30, 40, and 50 per cent. respectively during the year 1907.

	Total	PERCENTAGE ABSENT AT ONE TIME				
		10—	20—	30—	40—	50—
Ancoats .....	1	1	...	...	...	...
Central .....	1	1	...	...	...	...
St. George's.....	1	1	...	...	...	...
Cheetham .....	2	1	1	...	...	...
Crumpsall .....	1	1	...	...	...	...
Blackley .....	1	1	...	...	...	...
Harpurhey .....	6	2	4	...	...	...
Moston .....	1	...	1	...	...	...
Newton .....	4	2	1	...	1	...
Bradford .....	2	2	...	...	...	...
Beswick .....	...	...	...	...	...	...
Clayton .....	...	...	...	...	...	...
Ardwick .....	2	1	1	...	...	...
Openshaw .....	1	1	...	...	...	...
West Gorton .....	3	2	1	...	...	...
Rusholme .....	...	...	...	...	...	...
Chorlton-upon-Medlock .....	2	2	...	...	...	...
Hulme .....	2	2	...	...	...	...
Moss Side .....	2	1	1	...	...	...
Total.....	32	21	10	...	1	...



# WHOOPIING COUGH.

It is unnecessary to say much about Whooping Cough. It is a more distressing malady than Measles, and possibly, in the chest weakness which it leaves, a more disastrous one. The mortality which it causes is not usually so great; but in 1907 it was greater, the number of deaths from this cause being 314. We have to go back to 1900 for so high a death-rate from Whooping Cough. The maximum mortality from this disease is experienced in the latter part of the first year of age.

On the mean of five years it will be seen that in the three main divisions of the City the mean death-rates for five years follows the same order as those of Measles.

1907.—WHOOPIING COUGH MORTALITY.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean	1907
England and Wales .....	0·29	0·27	0·34	0·25	0·23	<b>0·28</b>	0·29
76 Great Towns.....	0·37	0·33	0·40	0·29	0·28	<b>0·33</b>	0·35
London .....	0·40	0·35	0·33	0·32	0·26	<b>0·33</b>	0·38
<b>City of Manchester</b> ...	0·44	0·38	0·50	0·34†	0·33†	<b>0·40†</b>	0·52†
Manchester Township ...	0·55	0·25	0·70	0·30	0·34	<b>0·43</b>	0·51
North Manchester.....	0·42	0·24	0·47	0·27	0·41	<b>0·36</b>	0·35
South Manchester .....	0·39	0·55	0·42	0·40†	0·26†	<b>0·40†</b>	0·67†
142 Smaller Towns .....	0·22	0·28	0·35	0·23	0·20	<b>0·26</b>	0·29
Rural Districts .....	0·22	0·22	0·27	0·20	0·19	<b>0·22</b>	0·21

† Exclusive of Moss Side and Withington.

Whooping Cough was, in 1907, most fatal in North Manchester. From the table given below we see that, so far as individual districts are concerned, the highest death-rates were experienced in Ancoats, Clayton, West Gorton, Openshaw, and Hulme.

The following table shows the districts most affected:—

1907.—DEATHS AND DEATH-RATES FROM WHOOPING COUGH IN THE  
VARIOUS DIVISIONS OF THE CITY.

Statistical Divisions	Estimated Population	Deaths	Death-rates	Average Death-rates, 1896-1906
City of Manchester .....	643,158	314	0·49	0·41
I. Manchester Township.....	126,622	64	0·51	0·54
II. North Manchester .....	192,312	68	0·35	0·40
III. South Manchester .....	324,224	182	0·56	0·36
I. { Ancoats .....	43,261	27	0·62	0·60
Central... ..	25,687	13	0·51	0·49
St. George's.....	57,674	24	0·42	0·52
II. { Cheetham .....	41,700	8	0·19	0·24
Crumpsall .....	9,369	1	0·11	0·35
Blackley .....	9,715	1	0·10	0·25
Harpurhey .....	22,131	2	0·09	0·50
Moston .....	19,334	4	0·21	0·36
Newton Heath .....	38,851	23	0·59	0·49
Bradford .....	25,185	14	0·56	0·52
Beswick .....	12,487	5	0·40	0·43
Clayton .....	13,540	10	0·74	0·35
III. { Ardwick .....	44,797	25	0·56	0·55
Openshaw .....	28,824	25	0·87	0·50
Gorton (West).....	31,926	30	0·94	0·52
Rusholme and Kirk. ....	26,684	10	0·37	0·32
Chorlton-upon-Medlock .....	55,988	23	0·41	0·35
Hulme.....	63,353	53	0·84	0·50
Moss Side .....	28,318	8	0·28	...
Withington .....	44,334	8	0·18	...

This is not only a fatal, but a most distressing disease. The difficulties are largely of the same nature as those affecting Measles.

In conclusion, if further advance is to be made on the present lines of work, this seems possible only if a special staff be appointed to deal with infectious disease. This would be the least expensive, and probably the most effectual, step which could be taken.

But it is also necessary to have legal powers to enforce isolation, and the observance of suitable precautions in the homes.

It is doubtful whether specific powers already contained in a Public Act, which may be made available by declaring Measles a notifiable disease, would be granted by Parliament as part of a local Act.

Still, the attempt should be made, and the powers most urgently needed, as stated in the Annual Report for 1906, are these :—

Any person who, being in charge of a person suffering from Measles, exposes such person without proper precautions against spreading the disease in any street, public place, shop, or inn, or who fails, as far as practicable, to secure isolation of any person so suffering, shall be liable to a fine not exceeding one pound.

The following would also be useful :—

When any member of a household (invaded by Measles) is in attendance at an elementary school, intimation of the fact shall be forthwith sent by the head of the household to the Medical Officer of Health at the Town Hall, etc.

The question of closure of the infant departments of elementary schools should be discussed between the Sanitary Committee and the Education Committee.

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## DIARRHŒA

No fly observations were made in 1907, nor were the cases investigated otherwise than by the Sanitary Inspectors. It is not possible without increase of the special staff to do justice to this class of disease as well as to the other infectious diseases, including Phthisis. An effort will, however, be made during the current year to obtain special information during, at all events, part of the year. The mortality from Summer Diarrhœa during 1907 was the lowest on record.

An abortive commencement of the usual rise occurred in the 32nd to the 34th weeks, as will be seen from Table 1, and it was not until the 38th week



that the definite rise commenced. The ascent occupied the usual period, the largest number of deaths being in the 41st week, or the 5th week from the commencement of the rise.

1907—TABLE I.

DEATHS FROM DIARRHOEAL DISEASES IN MANCHESTER IN THE  
WEEKS ENDING ON THE DATES GIVEN BELOW.

FIRST QUARTER			SECOND QUARTER			THIRD QUARTER			FOURTH QUARTER		
Jan. 5	...		April 6	...		July 6	2		Oct. 5	32	
„ 12	1		„ 13	2		„ 13	1		„ 12	43	
„ 19	2		„ 20	3		„ 20	2		„ 19	29	
„ 26	...		„ 27	2		„ 27	2		„ 26	18	
Feb. 2	1		May 4	2		Aug. 3	1		Nov. 2	12	
„ 9	2		„ 11	1		„ 10	8		„ 9	4	
„ 16	1		„ 18	1		„ 17	10		„ 16	5	
„ 23	1		„ 25	1		„ 24	7		„ 23	5	
Mar. 2	1		June 1	2		„ 31	3		„ 30	1	
„ 9	...		„ 8	2		Sept. 7	5		Dec. 7	4	
„ 16	3		„ 15	...		„ 14	12		„ 14	3	
„ 23	1		„ 22	1		„ 21	19		„ 21	5	
„ 30	1		„ 29	1		„ 28	22		„ 28	4	
Total...	14		Total...	18		Total ...	94		Total ...	165	

City Total . . . . . 291

The Enteric curve of cases commences to ascend in the 39th week, or two weeks after the Diarrhoeal curve of deaths, but this corresponds to the preliminary stage of the Enteric rise, and it is not until the 37th week that the definite rise of the Enteric curve occurs, six weeks behind the maximum number of deaths from Diarrhoea, and six or seven weeks, presumably, behind the maximum number of flies.

Although no observations of the number of flies were made in 1907, it is certain that they were remarkably sparse up to the end of the third quarter, and that after this time a considerable number made their appearance.

If reference be made to Table 2, it is seen that as regards the distribution in seasons, 1907 stands in a unique position, there being twice as many deaths in the fourth quarter of the year as in the second, whereas in other years the number of deaths in the third quarter is always in excess, generally much in excess of those in the third quarter.

TABLE 2.

The number of deaths in quarters is shown for successive years.

DIARRHŒA AND SIMPLE CHOLERA DEATHS IN QUARTERS, 1897-1907.

	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Mean for 10 years	1907
First Quarter.....	49	55	46	41	45	33	48	34	23	32	41	14
Second Quarter...	50	49	53	66	32	33	49	38	31	37	44	18
Third Quarter.....	803	807	948	562	865	120	303	626	615	780	643	72
Fourth Quarter...	62	179	74	153	74	110	107	63	60	132	101	187
	964	1090	1121	822	1016	296	507	761	729	981	829	291

From Table 3 we see that the extent to which the death-rate from Diarrhœa in Manchester exceeded that of England and Wales, London, or the other great towns was, in 1907, much less than in other previous years, whether the death-rate has been low or high. It is to be hoped that this is due to the improvements already effected in 1907 in respect of the closets of the City. To some extent, no doubt, that is so.

TABLE 3.—1907.—DIARRHŒA AND SIMPLE CHOLERA MORTALITY.—RATE PER 1,000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1902	1903	1904	1905	1906	Mean	1907
England and Wales .....	0·38	0·50	0·86	0·59	0·87	0·64	0·29
76 Great Towns .....	0·54	0·71	1·20	0·83	1·16	0·89	0·40
London .....	0·54	0·64	1·04	0·73	0·94	0·78	0·32
City of Manchester.....	0·54	0·91	1·36	1·15	1·54	1·10	0·45
Manchester Township .....	0·73	1·41	1·86	2·09	2·62	1·74	0·77
North Manchester.....	0·44	0·64	1·16	1·14	1·23	0·92	0·40
South Manchester .....	0·50	0·84	1·25	0·79	1·29	0·93	0·36
142 Smaller Towns .....	0·35	0·43	1·90	0·57	0·94	0·64	0·29
Rural Districts .....	0·22	0·31	0·46	0·32	0·52	0·37	0·18

Table 4 further increases our hopes that this may be in part the reason for the low death-rate from Diarrhœa.

In 1902 and 1903 the mean temperature in the third quarter was lower than it was in 1907, the rainfall in 1902 in the third quarter being considerably lower, in 1903 considerably higher than in 1907. In the year of low rainfall the death-rate was higher, in the year of heavy rainfall (1903) much higher than in 1907.

In truth, it is not the mean data which count, but the order in which they are arranged, week by week and day by day.

Probably, also, it is not the meteorological recorded facts which are directly operative, but some intermediate factor—such as, perhaps, the development of flies—which is influenced by them.

TABLE 4.

The following table supplies meteorological data for the third quarter of the year, the season in which the disease is most prevalent :—

Third Quarter of the years	Mean Temperature	Rainfall, Inches	Humidity, per cent.	Diarrhœa and Simple Cholera Mortality. Annual Rate per 1,000 living
1890	58°·8	8·1	74 %	2·28
1891	58°·2	12·8	79 %	1·57
1892	57°·0	12·5	78 %	2·07
1893	60°·4	10·7	74 %	4·95
1894	57°·8	9·0	78 %	1·55
1895	60°·4	11·2	77 %	4·17
1896	58°·5	9·7	76 %	2·93
1897	58°·9	9·7	73 %	6·01
1898	60°·1	6·1	74 %	6·00
1899	60°·8	7·7	75 %	6·96
1900	60°·3	9·6	78 %	4·14
1901	61°·9	6·5	74 %	6·33
1902	57°·6	5·9	78 %	0·88
1903	57°·8	12·3	77 %	2·19
1904	60°·2	6·9	73 %	4·48
1905	58°·9	9·4	76 %	3·89
1906	60°·8	6·2	75 %	4·91
<b>Mean</b>	<b>59°·3</b>	<b>9·1</b>	<b>76 %</b>	<b>3·84</b>
1907	58°·5	7·8	77 %	0·45

Table 5 shows the death-rate from Diarrhœa in each sanitary district. The highest death-rate occurs in West Gorton, and it will be of interest to note how this death-rate is affected by the conversion of middens into water-closets, which has been actively progressing.

After West Gorton come the three Central districts—Beswick, Newton, Chorlton-on-Medlock, and Harpurhey.

Then follows Hulme at a considerable distance.

The district of Bradford has a singularly low death-rate for 1907. On the average of the previous five years, the Central, Bradford, and West Gorton districts have the highest death-rate, followed by Ancoats, St. George's, and Clayton. Next in order come Ardwick, Beswick, Newton Heath, and Hulme.



Death-rates under one year per 1,000 Births															
	Estimated Population	Deaths	Death-rates	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Average 10 years	1897
City of Manchester ..	643,158	291	0.45	39.1	46.3	63.7	35.6	47.5	13.0	22.1	34.1	30.8	39.8	37.2	12.2
I. Manchester Township.	126,622	98	0.77	45.4	54.6	78.5	47.5	61.6	16.6	31.3	40.9	47.7	58.5	48.3	18.0
II. Northern Districts ...	192,312	77	0.40	34.8	37.3	57.4	24.4	42.3	10.7	15.0	30.1	31.3	30.8	31.4	10.3
III. Southern Districts....	324,224	116	0.36	37.7	46.7	58.7	36.1	43.2	12.4	22.0	33.0	22.5	36.7	34.9	10.7
I. { Ancoats .....	43,261	43	0.99	58.3	45.3	85.0	48.6	57.4	17.1	30.2	35.4	50.9	54.9	48.3	21.0
Central .....	25,687	16	0.62	45.2	75.2	71.1	55.0	66.1	15.0	48.5	51.0	52.4	54.9	53.4	19.1
{ St. George's .....	57,674	39	0.68	36.0	52.8	76.7	43.4	63.3	16.9	25.5	41.1	43.3	62.8	46.2	15.3
II. { Cheetham .....	41,700	10	0.24	22.5	22.6	36.0	18.0	27.3	9.4	10.1	10.7	18.8	19.6	19.5	7.5
Crumpsall .....	9,369	1	0.11	26.3	20.4	60.9	14.6	23.2	14.9	9.8	15.2	23.9	20.7	23.0	..
Blackley .....	9,715	1	0.10	4.4	9.8	44.2	4.4	9.2	4.0	12.1	23.5	3.8	3.5	11.9	3.7
Harpurhey .....	22,131	8	0.36	42.6	44.7	72.6	11.3	36.5	1.8	15.9	13.1	21.7	40.1	30.0	13.7
Moston .....	19,334	2	0.10	17.5	51.0	29.1	2.8	19.0	11.7	8.8	25.5	8.4	13.2	18.7	2.0
Newton Heath .....	38,851	27	0.69	32.9	37.8	57.9	25.4	49.7	12.3	15.6	31.4	43.3	36.0	34.2	16.8
Bradford .....	25,185	11	0.44	49.8	58.1	93.3	43.3	62.7	13.2	26.9	52.5	47.7	53.6	50.1	8.7
Beswick.....	12,487	13	1.04	52.5	23.6	46.4	40.6	50.0	20.6	8.4	60.8	43.2	23.0	36.9	19.0
{ Clayton .....	13,540	4	0.30	55.2	61.6	66.7	36.4	94.9	6.2	20.2	38.4	40.1	41.2	46.1	7.8
III. { Ardwick .....	44,797	25	0.56	27.7	50.2	61.7	43.7	48.4	11.5	20.0	38.5	28.7	42.8	37.3	12.8
Openshaw .....	28,824	8	0.28	42.6	58.5	64.3	44.7	48.1	14.2	27.4	28.0	23.9	50.0	40.2	8.2
West Gorton .....	31,926	32	1.00	42.7	69.3	85.7	52.6	58.4	21.2	31.1	47.2	35.1	60.0	50.3	28.5
Rusholme and Kirk ..	26,684	2	0.07	26.3	43.7	34.0	15.4	33.3	11.6	14.0	12.7	10.5	21.2	22.3	2.4
Chorlton-on-Medlock ..	55,988	17	0.30	24.2	32.8	58.7	25.1	17.9	7.1	23.9	23.8	29.1	32.8	28.5	13.7
Hulme .....	63,353	27	0.43	50.3	40.6	49.5	33.1	43.6	12.0	18.7	39.2	22.3	33.6	34.3	10.8
Moss Side.....	28,318	2	0.07	..	..	..	..	..	..	..	..	3.5	29.8	16.7	1.7
{ Withington .....	44,334	3	0.07	..	..	..	..	..	..	..	..	11.2	19.4	15.3	2.2

Considerable vicissitudes occur in the relative incidence of Diarrhœa on different districts in different years, and we must, therefore, look to some cause which is liable to change. Such a cause is the relative number of flies, and changes in the soil are much less subject to change.

There is, I think, sufficient reason for crediting the two species of house-fly with the carriage of fæcal infective matter to make it a matter of urgency that bye-laws should be passed dealing in an adequate manner with collections of manure, whether of animal or human origin, so as to prevent them becoming breeding grounds for flies on the one hand, or contaminating the soil on the other.

Recent investigations have inclined epidemiologists to look to transmission through animals as a means of reinforcing human infection. Danysz's poison for rats, ratin, and the Liverpool virus, which are so strongly recommended for the destruction of rats, are, it is said, essentially a bacillus of the coli group derived from human urine. It is, therefore, not impossible that rats and mice return the compliment in the case of Diarrhœa and Enteric Fever.

There is, however, no evidence on the subject with which I am acquainted.

Some improvement, as we have seen, appears to obtain in the relative mortality in Manchester from Diarrhœa in the year 1907, and it will be of interest to observe whether this continues, as such an improvement would emphasise the importance of the work of conversion of middens and pail-closets. In regard to Enteric Fever, also, a relative improvement was notable in 1907.

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## NOTIFICATION OF PHTHISIS.

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For the purposes of this report it is intended to give little more than returns.

It will be necessary to subject the material accumulated in the office to a careful scrutiny, with a view to see whether it can yield any further light on the questions at present being agitated, more especially with regard to the source of infection in individual cases. Such an analysis will, however, require much care and time, and may not yield results commensurate with the labour, though one hopes that it may.

In the same manner, the work done in connection with Tuberculosis in cows requires revision. It is not possible at present, however, to do more than call attention to the usual data.

First, then, we may consider Table I, which concerns the death-rates in districts for the year 1907, and the average of these death-rates for the years 1901-06.



TABLE I.  
DEATH-RATES FROM PHTHISIS.

STATISTICAL DIVISIONS	Mean Death-rate 1891-1900	1901	1902	1903	1904	1905	1906	Average 1901-1906	1907
City of Manchester.....	2·08	2·09	2·08	1·85	1·98	(1·68) 1·56	(1·81) 1·71	1·92	(1·80*) 1·70
I. Manchester Township ..	3·22	3·49	3·54	3·00	3·14	3·00	2·99	3·19	3·09
II. North Manchester .....	1·26	1·21	1·26	1·05	1·23	0·96 (1·53)	1·03 (1·79)	1·12	1·16 (1·64)*
III. South Manchester .....	1·90	1·93	1·86	1·79	1·90	1·33	1·59	1·80	1·47
I. { Ancoats .....	2·67	2·82	3·17	2·43	2·26	2·78	2·48	2·66	2·82
Central .....	3·70	4·43	4·34	3·68	4·35	3·58	4·28	4·11	3·85
St. George's .....	3·37	3·52	3·42	3·09	3·23	2·89	2·79	3·16	2·95
II. { Cheetham.....	1·16	0·99	1·05	0·80	1·11	0·87	0·78	0·93	1·06
Crumpsall .....	1·03	1·02	0·45	0·99	0·44	0·43	0·65	0·66	1·28
Blackley .....	1·18	2·14	1·33	0·98	1·61	1·59	0·94	1·43	1·13
Harpurhey .....	1·21	1·01	1·49	1·50	0·69	0·65	1·24	1·10	1·31
Moston .....	0·89	1·07	1·22	0·63	1·17	1·08	0·72	0·98	0·78
Newton .....	1·51	1·46	1·29	1·27	0·80	0·79	1·19	1·13	1·47
Bradford .....	1·35	1·18	1·62	1·23	1·30	1·29	1·40	1·34	1·31
Beswick .....	1·30	1·37	1·27	1·08	1·57	1·31	1·37	1·33	0·88
Clayton .....	1·02	0·72	1·33	0·71	0·94	0·95	0·72	0·90	0·81
III. { Ardwick .....	1·67	1·54	1·62	1·62	1·78	0·98	1·81	1·56	1·52
Openshaw .....	1·25	1·24	1·16	1·33	1·35	1·06	0·80	1·16	1·35
West Gorton .....	1·65	1·43	1·61	1·58	1·53	1·38	1·65	1·53	0·94
Rusholme and Kirk. ..	1·10	1·61	1·82	1·10	1·00	1·00	1·18	1·29	1·27
Chorlton-upon-Medlock	2·09	2·38	1·85	1·76	2·47	1·90	2·18	2·09	2·02
Hulme .....	2·39	2·36	2·44	2·50	2·26	2·07	2·19	2·30	2·04
Moss Side .....	..	..	..	..	..	0·75	1·00	..	0·99
Withington .....	..	..	..	..	..	0·50	0·84	..	0·83

\* Exclusive of Moss Side and Withington.



It will be seen that while the death-rate in 1907 is below the average for six years, it is as high as that of 1906, and higher than the death-rate for 1905. It is chiefly in South Manchester that improvement in 1907 is evident. In the Manchester Township the death-rate is but little lower. In North Manchester it is higher. This may, however, be due to under-estimation of the population. The death-rate in North Manchester is not much over one-third of the death-rate in the Manchester Township, despite the fact that this division of the City is, in the main, industrial, and contains some poor districts. It might supply a text for those who hold that drainage has to do with a low Phthisis death-rate, since this part of the City is much less flat than the other two divisions. There are, however, more potent factors in operation, as may be seen by comparing the death-rates from all causes in the home, in Union Hospitals, and in other institutions, for the three divisions of the City.

The death-rate in 1907 was higher than the average for the previous six years in the following districts :—Ancoats, Cheetham, Crumpsall, Harpurhey, Newton, and Openshaw.

Table 2 supplies like facts in regard to Tuberculosis other than Phthisis, and may be taken as expressing the mortality from Tuberculosis among the young. This death-rate again reaches the low level attained in 1905, and the improvement is here fully sustained. We may assume that any improvement as regards Tuberculous infection in milk would be reflected in this table. The improvement shown in 1907 is somewhat less in the Central than in the other two divisions, as might be expected if milk were an important factor in its production.

No improvement over the six years is present in these districts :—the Central, Crumpsall, Moston, Rusholme, and Hulme.

No close relationship is manifested in the course of the death-rates from Phthisis, and those due to Tuberculosis other than Phthisis.

The next table (page 132) gives particulars in regard to the notifications of cases of Phthisis made from each district in each quarter of the year.

On comparison of the number of notifications, it will be seen that in nearly every district the number of notifications exceeds the number of deaths. It may be assumed that the great majority of the cases are notified. The discrepancy is greatest in the Central districts, in which many of the cases do not belong to Manchester. The total number of notifications in 1907 greatly exceeds the number of deaths.

It will be also seen that notification is fairly general over the City.

TABLE 2.

I give a similar table for Tubercular disease other than Phthisis.

DEATH-RATES FROM TUBERCULAR DISEASES OTHER THAN PHTHISIS.

STATISTICAL DIVISIONS	Mean Death-rate 1891-1900	1901	1902	1903	1904	1905	1906	Average 1901-1906	1907
City of Manchester.....	0·90	0·78	0·71	0·76	0·69	0·56	0·61	0·69	0·56
I. Manchester Township ..	0·99	1·14	0·89	0·95	0·79	0·69	0·87	0·89	0·76
II. North Manchester .....	0·60	0·42	0·47	0·41	0·41	0·42	0·37	0·42	0·36
III. South Manchester .....	1·03	0·82	0·77	0·90	0·82	0·58	0·65	0·76	0·62
I. { Ancoats .....	1·03	1·44	0·98	0·92	0·91	0·82	0·99	1·01	0·90
Central .....	1·03	0·97	0·89	0·70	0·54	0·59	0·95	0·77	0·86
St. George's .....	0·95	1·02	0·84	1·11	0·85	0·65	0·74	0·87	0·62
II. { Cheetham.....	0·41	0·27	0·37	0·26	0·35	0·37	0·22	0·31	0·10
Crumpsall .....	0·60	0·23	0·34	0·33	0·22	0·11	0·22	0·24	0·32
Blackley .....	0·73	0·34	0·00	0·00	0·54	0·64	0·21	0·29	0·21
Harpurhey .....	0·93	0·76	0·53	0·34	0·42	0·45	0·67	0·53	0·50
Moston .....	0·57	0·66	0·30	0·42	0·65	0·18	0·11	0·39	0·62
Newton .....	0·52	0·47	0·49	0·57	0·27	0·39	0·29	0·41	0·36
Bradford .....	0·75	0·42	0·58	0·49	0·49	0·69	0·68	0·56	0·52
Beswick .....	0·75	0·43	0·68	0·67	0·49	0·33	0·57	0·53	0·32
Clayton .....	0·68	0·24	0·78	0·51	0·56	0·61	0·40	0·52	0·44
III. { Ardwick .....	1·30	0·80	0·74	0·94	1·02	0·98	0·75	0·87	0·60
Openshaw .....	1·12	0·84	0·80	1·11	0·99	0·78	0·73	0·88	0·66
West Gorton .....	1·12	0·75	0·67	0·76	0·81	0·64	0·73	0·73	0·66
Rusholme and Kirks...	0·84	0·97	0·91	0·86	0·46	0·58	0·49	0·71	0·75
Chorlton-upon-Medlock	0·83	0·66	0·69	0·77	0·67	0·58	1·10	0·75	0·54
Hulme .....	1·03	0·96	0·87	0·97	0·92	0·83	0·92	0·91	0·96
Moss Side.....	..	..	..	..	..	..	..	..	0·25
Withington .....	..	..	..	..	..	..	..	..	0·36

There is no ground for assuming that only poor people are notified, though, doubtless, well-to-do persons suffering from Phthisis would probably not be notified.

*Notification of Phthisis.*

The subsequent tables were compiled by Mr. G. H. Lock from the records of the Tuberculosis Office, which have been under his charge since the commencement of voluntary notification.



TABLE 3.—PHTHISIS, 1907.

The following table shows the number of cases of Phthisis notified in 1907, referred, in the case of Union Hospitals, to the district from which they have come. These notifications are given also in quarters, and side by side with the total number of notifications is the number of deaths referred to the district, and also the death-rate.

	CASES NOTIFIED				DEATHS	DEATH-RATE	NOTIFICATION	
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter				Total
City of Manchester .....	387	491	354	358	1590	1092	1'70*	2'47
I. Manchester Township .....	180	227	158	192	757	391	3'09	5'98
II. North Manchester .....	76	80	68	57	281	223	1'16	1'46
III. South Manchester .....	131	184	128	109	552	478	1'47*	1'70
I. { Ancoats .....	47	69	51	54	221	122	2'82	5'11
Central .....	53	48	35	38	174	99	3'85	6'77
St. George's .....	80	110	72	100	362	170	2'95	6'28
II. { Cheetham .....	22	19	19	16	76	44	1'06	1'82
Crumpsall .....	2	3	...	2	7	12	1'28	0'75
Blackley .....	4	3	3	4	14	11	1'13	1'44
Harpurhey .....	6	2	5	7	20	29	1'31	0'90
Moston .....	5	2	10	2	19	15	0'78	0'98
Newton .....	17	23	17	13	70	57	1'47	1'80
Bradford .....	11	17	7	6	41	33	1'31	1'63
Beswick .....	3	4	3	4	14	11	0'88	1'12
Clayton .....	6	7	4	3	20	11	0'81	1'48
III { Ardwick .....	19	31	18	11	79	68	1'52	1'76
Openshaw .....	4	10	7	13	34	39	1'35	1'18
West Gorton .....	15	6	14	7	42	30	0'94	1'32
Rusholme and Kirkmanshulme	6	14	16	11	47	34	1'27	1'76
Chorlton-upon-Medlock .....	24	48	29	33	134	113	2'02	2'39
Hulme .....	56	64	40	28	188	129	2'04	2'97
Moss Side .....	6	9	3	5	23	28	0'99	0'81
Withington .....	1	2	1	1	5	37	0'83	0'11

\* Excluding Moss Side and Withington.



TABLE 4.

PARTICULARS OF CASES NOTIFIED FROM INSTITUTIONS DURING THE  
YEAR 1907.

Institutions	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Manchester Union Workhouse .....	108	134	86	130	458
Chorlton Union Workhouse .....	51	38	38	35	162
Prestwich Union Workhouse.....	4	5	2	2	13
Poor-law Union Cases .....	...	1	...	1	2
Consumption Hospital .....	78	90	69	64	301
Ancoats Hospital .....	10	11	16	16	53
Chorlton-upon-Medlock Dispensary ...	1	3	1	3	8
Hulme Dispensary .....	6	2	6	2	16
Gartside Street Dispensary .....	5	20	10	2	37
Royal Infirmary .....	29	37	30	30	126
Medical Mission, Red Bank .....	2	4	1	2	9
Northern Hospital .....	1	1	...	...	2
St. Mary's Hospital .....	21	57	7	...	85
Southern Hospital .....	2	4	...	...	6
Children's Hospital, Pendlebury .....	...	...	...	...	...
H.M. Prison .....	1	...	1	...	2
Jewish Hospital .....	...	...	...	...	...
Cases from Death Returns .....	...	...	5	8	13
Total .....	318	404	272	295	1293
Private Practitioners .....	68	84	87	71	310

The sources of the notifications are given in Table 4. Somewhat under one-half of the notifications are received from the Union Hospitals, under one quarter from the Consumption Hospital, and again under one-quarter from private practitioners.

There is apparent from this table no uniformity as regards variation of numbers notified according to season, nor, for that matter, as regards variation in the number of deaths.

The next table shows the numbers notified in successive years by private practitioners, poor-law cases, and cases from other institutions. It will be noted that more were notified in 1907 than in any previous year. The number of cases notified by practitioners was larger than in any year since 1901; from institutions was considerably higher than in any previous year.

It is to be hoped that this does not indicate an increase of Phthisis.

Table 5 shows the numbers notified in successive years since 1899, and distinguishes poor-law cases, cases notified by institutions other than the Union Hospitals, and cases notified by private practitioners:—

TABLE 5.  
PHTHISIS, 1907—NUMBER OF CASES NOTIFIED.

Year	Poor-law Cases	Institutions	Private Practitioners	Total
1900 .....	578	455	540	1573
1901 .....	625	373	341	1339
1902 .....	667	305	303	1275
1903 .....	556	550	251	1357
1904 .....	512	440	250	1202
1905 .....	527	588	291	1406
1906 .....	565	510	304	1379
1907 .....	634	646	310	1590
Total .....	4664	3867	2590	11121

The next table furnishes a number of particulars regarding cases notified, and classifies the work of disinfection. It shows, also, the bacteriological examinations of sputum made. These examinations are necessary both for administrative and for etiological purposes. It will be noted that the proportion of the deaths registered during the year, which had been under the care of the Tuberculosis Department, continues to increase.

TABLE 6.—STATISTICS RELATING TO PHTHISIS.

	1907	1906	1905	1904	1903	1902	1901	1900	1899 Sep. 1 to Dec. 31	Totals
<i>Cases Visited and Registered—</i>										
Males .....	988	929	817	745	848	917	959	786	231	7220
Females .....	600	464	565	471	515	532	546	538	194	4425
Totals ...	1588	1393	1382	1216	1363	1449	1505	1324	425	11645
<i>Houses Disinfected—</i>										
1. By Corporation—										
(a) With solution of chlorinated lime only .....	581	495	475	449	484	601	792	581	No Record	4458
(b) With lime solu- tion only .....	0	0	0	0	0	2	15	109		126
(c) By Esmarch's method and solution of chlorinated lime ..	1106	1042	1086	788	643	359	144	0		5168
Totals ...	1687 (in 1556 houses)	1537 (in 1346 houses)	1561 (in 1387 houses)	1237 (in 1084 houses)	1127	962	951	690	...	9752
2. By Tenants—										
Esmarch's method	2860 (in 1627 houses)	2637 (in 1566 houses)	2016 (in 1267 houses)	2266 (in 1404 houses)	2118	1937	1776	1299	No Record	16909
Totals...	4547	4174	3577	3503	3245	2899	2727	1989	...	26661
<i>Specimens of Sputum Examined:</i>										
Positive .....	350	349	298	242	239	248	232	104	...	2062
Negative .....	654	562	475	418	389	337	285	154	...	3274
Totals ...	1004	911	773	660	628	585	517	258	...	5336
<i>Deaths—</i>										
(a) Among total cases visited and registered .....	687	680	566	661	578	652	638	560	93	5115
(b) Among all cases for Manchester (including those under a) .....	1082	1089	988	1106	1023	1145	1142	1133	270	8980
<i>Cases reported as sent to Hospital .....</i>	1993	1541	1349	1207	1159	1166	1012	851	140	10418
<i>Notified from common lodging-houses...</i>	288	223	155	188	206	239	254	146	41	1740



The occupations of cases notified are classified in the next table. It will be seen that a large section of the cases could not be regarded as poor persons until overtaken by the disease:—

TABLE 7.—PHTHISIS, 1907.

## OCCUPATIONS OF NOTIFIED CASES—FEMALES.

Occupation	General	Crumpsall	Withington	Total	Total 1902-1907
Cotton Manufacture .....	26	7	2	35	190
Charwomen .....	22	36	9	67	286
Do. at Public-houses .....	2	4	1	7	35
Domestic Servants .....	7	5	3	15	109
Fancy Box Makers .....	5	..	..	5	19-4 years
Housework .....	98	15	16	129	802
Hawkers .....	3	11	2	16	56-5 years
Laundresses .....	9	6	4	19	69
Machinists .....	35	5	5	45	243
Milliners and Dressmakers .....	...	1	..	1	21-5 years
Printing and Binding Trade .....	2	2	2	6	19-4 years
Rubber Workers .....	3	..	..	3	30-5 years
Rag Sorters, etc. ....	8	9	..	17	35-4 years
Scholars and Scholastic .....	95	2	..	97	220-4 years
Smallware Manufacture .....	2	..	..	2	7-4 years
Tobacco Workers.....	2	..	..	2	10-4 years
Tailoresses and Mantle Makers ..	6	4	..	10	43-4 years
Public-house (except Charwomen).	7	2	..	9	45
Shop Attendants .....	7	1	..	8	25-3 years
Metal Works Employés .....	1	2	..	3	10-3 years
Furriers .....	3	..	..	3	5-3 years
Clerks.....	..	..	..	..	10-3 years
Brushmakers .....	1	..	..	1	4-3 years
Waitresses, etc. (Restaurant) ....	1	..	..	1	6-2 years
Theatrical .....	1	1	..	2	3-2 years
Cooks .....	1	1	2	4	6-2 years
Lodging House Keepers .....	2	..	..	2	4-2 years
Unclassified.....	23	6	2	31	50-2 years
Total .....	372	120	48	540	2362

## PHTHISIS, 1907.—OCCUPATIONS OF NOTIFIED CASES—MALES.

Occupation	General	Crumpsall	Withington	Total	Total 1902-1907
Barmen, etc.....	11	6	4	21	89
Bakers .....	4	2	2	8	21-4 years
Brushmakers .....	..	..	1	1	4
Brass and Copper Workers .....	6	..	3	9	31-4 years
Building Trade.....	10	19	6	35	157
Carters .....	15	2	5	22	86-4 years
Commercial Travellers .....	5	1	2	8	46
Cotton Manufacture .....	9	2	1	12	49
Clerks.....	31	3	2	36	164
Coach, Car, Drivers, etc. ....	3	..	4	7	32-5 years
Dock Labourers .....	5	2	4	11	62
Dyers, etc. ....	6	5	..	11	65
French Polishers .....	1	..	..	1	17-4 years
Gasworks Employés .....	2	2	1	5	29
Glass Workers .....	5	1	..	6	27
General Labourers .....	59	88	24	171	510-5 years
Hawkers .....	8	37	3	48	218
Horsekeepers .....	1	4	3	8	19-3 years
Housepainters .....	6	8	2	16	45-4 years
Hairdressers .....	1	1	..	2	9-4 years
Ironworkers .....	52	23	11	86	462
Leather Trade .....	3	..	..	3	13-4 years
Labourers (Chemical) .....	2	4	..	6	10-4 years
Market Porters.....	3	25	3	31	150
Pattern Card Makers .....	2	..	..	2	8-3 years
Printers.....	9	1	1	11	53
Plumbers .....	..	1	..	1	18-4 years
Pork, etc., Butchers .....	1	2	..	3	13-5 years
Rubber Workers .....	10	1	5	16	74
Railway Employés .....	9	4	3	16	88
Scholars and Scholastic .....	52	2	2	56	162-4 years
Soldiers .....	3	6	3	12	93
Shoemakers.....	9	7	..	16	99
Tailors .....	18	6	1	25	101
Telegraphists .....	..	..	..	..	2-2 years
Warehousemen (excluding Porters)	25	5	9	39	237
Warehouse Porters .....	8	13	3	24	111
Wood Workers .....	24	17	5	46	222
Whitesmiths .....	2	1	..	3	16-3 years
Colliers.....	..	..	..	..	3-2 years
Shop Attendants .....	8	..	..	8	20-2 years
Unclassified.....	35	19	5	59	108-2 years
Total .....	463	320	118	901	3743

The next table supplies an analysis of the presumed sources of infection, with a brief statement of the probability that the person given as the source was in reality the origin of the disease. In 395 out of 1,590 notified cases it is believed that the source of the attack was probably traced.

TABLE 8.  
SOURCES OF INFECTION—PHTHISIS, 1907.

CASES OTHER THAN THOSE NOTIFIED FROM THE WORKHOUSES.

MOST PROBABLE SOURCE OF INFECTION	Likely 1902-1907	Likely 1907	Less Likely	Possible	Total
Father .....	170	42	14	2	58
Mother.....	104	30	11	1	42
Brother .....	165	35	13	1	49
Sister .....	130	30	12	..	42
Husband .....	60	13	5	1	19
Wife .....	36	9	4	..	13
Uncle .....	30	10	1	1	12
Aunt .....	25	7	7	..	14
Son.....	32	10	3	..	13
Daughter.....	22	5	1	..	6
Grandfather .....	4	1	1	..	2
Grandmother .....	4	..	3	..	3
Nephew .....	4	3	..	..	3
Niece .....	3	1	1	..	2
Father-in-law.....	..	..	1	..	1
Mother-in-law.....	5	1	1	..	2
Son-in-law .....	1	1	..	..	1
Brother-in-law .....	29	4	3	..	7
Sister-in-law .....	19	6	1	..	7
Cousin .....	13	3	5	..	8
Relatives .....	10	1	1	..	2
Companion .....	133†	35	14	1	50
Neighbour .....	51†	22	12	3	37
Tenant (Landlady, etc.) .....	17	3	2	..	5
Lodger, Fellow-lodger .....	45	17	4	..	21
Patients, Hospital, etc. ....	1	1	..	..	1
Employer .....	5†	1	..	1	2
Workfellow .....	169†	55	35	..	90
Workplace or Work .....	38†	14	63	3	80
Houses (including public-houses, etc.) .....	82†	23	32	1	56
Milk or Food .....	4	3	15	..	18
Club .....	..	..	1	..	1
Clothing .....	..	..	..	..	..
Re-infected .....	6†	..	1	..	1
Army .....	8	2	..	..	2
Extension from Bone, etc., Disease .....	1	1	3	..	4
Railway carriages .....	..	..	1	..	1
Schoolfellow .....	6	5	20	3	28
Monkey .....	1	1	..	..	1
Infected out of Manchester ....	..	..	..	..	45
Multiple sources .....	..	..	..	..	99
No information .....	..	..	..	..	21
Total.....	1433	395	291	18	770*

\* This total does not include the 99 cases with Multiple Sources. † Five years.



SOURCES OF INFECTION—PHTHISIS, 1907.  
CASES NOTIFIED FROM THE WORKHOUSES.

MOST PROBABLE SOURCE OF INFECTION	Likely 1902 - 1907	Likely	Less Likely	Possible	Total
Father .....	35	5	3	..	8
Mother.....	36	7	5	..	12
Brother .....	63	16	4	2	22
Sister .....	49	10	1	..	11
Husband .....	49	16	6	..	22
Wife .....	47	8	1	2	11
Uncle .....	5	..	..	1	1
Aunt .....	2	2	1	..	3
Nephew and Niece .....	19	1	..	..	1
Son.....	20	3	..	..	3
Daughter.....	13	2	1	..	3
Step-brother .....	1	..	..	..	..
Father-in-law .....	5	2	1	..	3
Mother-in-law.....	..	..	..	..	..
Son-in-law.....	2	..	1	..	1
Brother-in-law .....	12	3	1	1	5
Sister-in-law .....	6	3	1	..	4
Cousin .....	3	..	1	..	1
Relatives.....	1	1	1	..	2
Companion .....	104†	51	12	..	63
Schoolfellow .....	2	1	..	..	1
Neighbour .....	19†	6	6	..	12
Tenant (Landlady, etc.) .....	12	2	..	..	2
Lodger and Fellow-lodger .....	39	17	6	1	24
Carried forward.....	544	156	52	7	215

† Five years.

CASES NOTIFIED—*continued.*

MOST PROBABLE SOURCE OF INSPECTION	Likely 1902-1907	Likely	Less Likely	Possible	Total
Brought forward . . . . .	544	156	52	7	215
Employer . . . . .	..	..	1	..	1
Workfellow . . . . .	68	30	12	..	42
Workplace or Work . . . . .	43	16	34	..	50
Houses (including public-houses, etc.) . . . . .	205	37	101	..	138
Army . . . . .	27	5	..	..	5
Milk or Food . . . . .	2	2	4	..	6
Asylum, Workhouse, etc. . . . .	13	10	2	..	12
Extension from Bone, etc., Disease . . . . .	1	1	..	..	1
Infected out of Manchester . . .	..	..	..	..	71
No information . . . . .	..	..	..	..	73
Multiple Sources . . . . .	..	..	..	..	118
Total . . . . .	903	257	206	7	614*

\* This total does not include the 118 cases with Multiple Sources.

The preceding table emphasises the need for using every measure in our power to reduce infection. Undoubtedly the work done by our enquirers, by the Health Visitors, and by the Sanitary Inspectors is of great value in inducing people to take precautions against infection, as is also the insistence carried out from the Tuberculosis office on manufacturers, to see that precautions are posted in the workshops. The inspectors of workshops have also done useful work in connection with the prevention of Phthisis.

But it must always remain of importance that persons liable to infect others should be isolated in public institutions, and taught how personally to avoid the conveyance of infection.

It is also of much interest to trace the fate of persons who have been treated in public institutions. I give, therefore, a statement prepared by Mr. Lock of the fate of cases treated in the Clayton Hospital and in the Delamere Sanatorium, with a synopsis of the results. The particulars relating to the cases discharged from Clayton Hospital in 1907 have been prepared by Dr. Hutchinson from the records. This statement is contained in the following tables 9, 10, 11 and 12.

TABLE 9.—PHTHISIS. PATIENTS TREATED IN CLAYTON VALE HOSPITAL TO THE END OF 1907.

MALES.

Year	No. of Cases Admitted	Cases Discharged	Re-admitted	Died in the Hospital	Dead December, 1907	Discharged with lungs improved	Discharged with lungs not improved	Number of discharged who gained weight in the Hospital.	In full work, December, 1907	In partial work December, 1907	Lost sight of	Still in the Hospital, at end of 1907
1904	20	In 1904, 5	...	...	17	...	5	1	2	...	...	...
		In 1905, 10	...	2		2	8	7				
		In 1906, 2	2	1		...	2	1				
		In 1907, 0	1	...		...	...	...				
1905	24	In 1905, 8	2	3	19	2	6	9	1	1	1	1
		In 1906, 8	...	2		4	4	5				
		In 1907, 0	...	2		...	...	...				
		In 1906, 25 In 1907, 7	1	4 1		9 2	16 5	23 3				
1907	30	In 1907, 12	...	5	9	5	7	7	2	1	...	13

FEMALES.

1905	20	In 1905, 3 In 1906, 4 In 1907, 6	...	1 5 ...	10	1 1 5	2 3 1	3 4 5	4	4	1	1
1906	23	In 1906, 6 In 1907, 6	...	2 2		2 1	4 5	6 5		2	1	7
		In 1907, 9	1	5	7	6	3	8	1	3	5	13



TABLE 10—*Phthisis*—Corporation Patients treated in Crossley Sanatorium to the end of December, 1907.

MALES.

Year	Number of Cases Admitted	Cases Discharged	Re-admitted	Died in the Sanatorium	Dead, May, 1908	Discharged with lungs improved	Discharged with lungs not improved	Number of discharged who gained weight in Sanatorium	In full work May, 1908	In partial work May, 1906	Lost sight of	Still in the Sanatorium June 1st, 1903
1905	16	In 1905..... 5	1	}	{	1	4	4	}	...	2	...
		In 1906..... 10	2			6	4	10				
		In 1907..... 0	...			...	...	...				
		In 1908..... 1	...			1	...	1				
1906	18	In 1906..... 11	...	}	{	1	10	7	}	...	4	1
		In 1907..... 5	1			5	...	4				
		In 1908..... 0	...			...	...	...				
		In 1907..... 19	1			8	11	18				
1907	29	In 1908..... 8	1	}	{	3	5	8	}	4	1	2

FEMALES.

1905	14	In 1905..... 7	...	}	{	3	4	7	}	1	3	...
		In 1906..... 5	1			1	4	2				
		In 1907..... 1	...			1	...	1				
1906	14	In 1906..... 7	...	}	{	5	2	7	}	3	1	1
		In 1907..... 6	1			3	3	6				
		In 1908..... 0	1			...	...	...				
1907	16	In 1907..... 8	1	}	{	5	3	6	}	1	3	3
		In 1908..... 6	1			1	5	5				

TABLE II—Table showing the condition up to May, 1907, of cases of Phthisis treated in Clayton Hospital since 1904 who have survived to the present time, with special reference to the influence of nutrition after discharge.

CLAYTON CASES.

Prog. No.	Sex	Age	Date of Admission	Date of Discharge	Condition on Discharge	Food, etc.	Subsequent reports on Patient's Health
925/04	M	19	Oct. 20, 1904	Oct. 19, 1905	2 lobes affected. General condition good	Good	In full work 18 months to May, 1908. Keeps well
855/04	M	17	Oct. 14, 1904	June 1, 1907	2 lobes affected. Good condition	Good	Keeps better. Has worked from 2 months after discharge
1195/04	M	36	Jan. 9, 1905	May 1, 1906	Both lungs affected. Good condition	Good	Keeps better. In full work from 2 months after discharge
281/05	M	18	April 8, 1905	June 26, 1905	Slight affection of right lung	Good	Quite well when last heard of
468/05	M	48	Aug. 14, 1905	March 7, 1906	Slight affection left lung. Good condition	Good	Well. Has been working. Now out of employment
966/05	M	33	Jan. 6, 1906	July 17, 1906	Both apices affected. Good condition	Good	Improvement maintained when last heard of
1187/04	M	43	Jan. 29, 1906	March 24, 1906	Left apex. Fair general condition	Fair	In partial work. Health not satisfactory
43/05	M	17	Mar. 16, 1906	Nov 15, 1906	Cavity left lung. Fair condition	Good	Health fluctuates. Has worked only six months.
1207/05	M	13	Mar. 29, 1906	Dec. 5, 1906	Both apices slightly affected. Good condition	Good	Improved and in full work. Then lost ground and ceased work
543/06	M	42	May 18, 1906	July 17, 1906	Both apices affected. Good condition.	Fair	Improved and worked. Then fell off and was re-admitted.
931/05	M	39	June 4, 1906	August 21, 1906	Slight affection both lungs. Larynx involved.	Good	Improved. Has worked 1 year.
1000/05	M	35	Aug. 8, 1906	October 3, 1906	One apex. Good condition.	?	In full work when last heard of
845/06	M	20	Aug. 28, 1906	Dec. 10, 1906	One lung badly affected. Good condition.	Good	Improved. In partial work.
852/06	M	26	Aug. 25, 1906	Dec. 19, 1907	Both lungs. Good condition.	Good	Would work if he could find employment.
781/06	M	12	Jan. 15, 1907	Feb. 15, 1908	3 lobes. Fair condition.	Good	Not improving
	M	11		January 27, 1908	Harsh breathing. Good condition.	Good	Improving. Attending school.
47/07	M	35	April 15, 1907	Sept. 20, 1907	Both apices and larynx.	Good	Losing ground, but about to work.
409/07	M	38	April 27, 1907	July 22, 1907	1 apex slightly. Improved.	Good	Health varies. Has been in full work to date

## CLAYTON CASES—continued.

Prog. No.	Sex	Age	Date of Admission	Date of Discharge	Condition on Discharge	Food, etc.	Subsequent reports on Patient's Health
481/07	M	13	June 1, 1907	Aug. 27, 1907	1 apex slightly. Improved	Good	In full work when last heard of
1169/05	M	38	Oct. 21, 1907	Feb. 14, 1908	Right upper lobe. Good condition	Good	Stationary. Not working
966/07	M	42	Nov. 25, 1907	March 18, 1908	Both upper lobes. Good condition	Good, but no appetite	Losing ground. Not working
561/04	F	19	Aug. 16, 1905	June 29, 1907	Both lungs diseased. Fair condition	Good	In Canada. Losing ground. Cannot work
245/03	F	34	Aug. 19, 1905	Feb. 3, 1906	Both upper lobes. Good condition	Good	Improved. Full work 1 year
790/05	F	19	Aug. 25, 1905	July 14, 1907	4 lobes Fair condition	Very short	Losing ground. Has done no work
187/05	F	37	Oct. 11, 1905	May 3, 1906	Both upper lobes. Good condition	Good	Health fluctuates. Full work for 2 years
950/05	M	6½	Oct. 11, 1905	Jan. 19, 1907	Right apex, slight. Good condition	Good	Recovered. Attends school
1001/05	F	10	Oct. 12, 1905	July 16, 1906	Both apices. Good condition	Good, but no appetite	Health varies. Attends school
1024/05	F	18	Oct. 24, 1905	July 8, 1907	2 lobes. Good condition	Good	Improved. Household duties. Then fell off, and was re-admitted in March, 1908
1092/05	F	41	Nov. 6, 1905	Feb. 15, 1906	Both upper lobes. Good condition	Fair	No improvement. Partial housework
1196/05	F	21	May 26, 1906	June 29, 1907	Both apices. Fair condition.	Good	Improved. Housework
704/06	M	7	June 28, 1906	July 8, 1907	? Cavity. Both apices. Good condition	Good	Improving. Attends school.
681/06	F	6	July 12, 1906	Feb. 2, 1908	Both upper lobes. Good condition	Good	Stationary. Attends school.
868/04	F	16	July 25, 1906	March 23, 1908	3 lobes. Fair condition	Good	Improved, then lost ground, and was re-admitted June, 1908
629/06	F	46	Aug. 27, 1906	Nov. 26, 1906	Both apices. Fair condition	Good	Slightly better, then fell off, and was re-admitted in October, 1907
801/06	F	25	Aug. 24, 1906	July 9, 1907	Upper right lobe. Greatly improved	Good	Improved. Began working in April, 1908
1281/05	F	52	Dec. 15, 1906	July 8, 1907	3 lobes. Fair condition	Very poor	Losing ground. Housework
947/06	F	46	March 6, 1907	Dec. 24, 1907	3 lobes. Fair condition	Good	Health maintained
239/07	F	13	May 17, 1907	July 8, 1907	3 lobes. Fair condition	Plain	Losing ground. Housework



TABLE 12—The corresponding facts, ascertained for cases discharged from the Crossley Sanatorium.

Prog. No.	Sex	Age	Date of Admission	Date of Discharge	Condition on Discharge	Food, etc.	Subsequent reports on Patient's Health
94/06	F	15	June 10, 1907	Jan. 27, 1908	3 lobes. Good condition	—	Was admitted from Delamere, and was sent back there February, 1908
753/07	F	22	June 21, 1907	Nov. 13, 1907	Right apex. Good condition	Good	Full work. Improving
872/07	F	20	July 18, 1907	Jan. 20, 1908	Both upper lobes. Good condition	Poor	Losing ground. Housework
204/07	F	31	Aug. 10, 1907	Feb. 9, 1908	Both apices. slight Good condition	?	Works daily until 6-30 p.m.
370/05	M	29	June 8, 1905	Jan. 30, 1907	2 lobes and larynx Fair condition	Good	Worked up to October, 1907. Now unable
252/05	M	20	June 29, 1905	Oct 26, 1905	Right apex Good condition	Good	Worked over one year to present
840/05	M	32	Oct. 10, 1905	Jan. 27, 1906	2 lobes. Fair condition	Good	Full work when last heard of
1097/05	M	27	Nov. 9, 1905	Sept. 1, 1906	2 lobes and larynx. Good condition	Good	Health fair. Full work 18 months
1124/05	M	29	Nov. 21, 1905	April 11, 1907	2 lobes. Good condition	Good	Health fair. In full work to December, 1907
1135/05	M	24	Nov. 28, 1905	April 17, 1906	Right apex, slight. Good condition	Poor	Lost ground, and admitted to Clayton April, 1907
355/06	M	28	April 17, 1906	Sept 6, 1906	3 lobes. Disease extending	Good	Improved. Full work
819/06	M	14	Aug. 14, 1906	March 30, 1907	Both apices. Disease extending	Good, but no appetite	Lost ground, and was re-admitted in October, 1907
870/06	M	40	Sept. 18, 1906	Dec. 12, 1906	Right apex. Good condition	Good, then only fair	Improved. Full work when last heard of
292/00	M	28	Sept. 18, 1906	Jan. 22, 1907	Both upper lobes Good condition	Fair	Health maintained Full work
1033/06	M	17	Oct. 30, 1906	July 16, 1907	2 lobes. Good condition	? Poor	Losing ground. Has worked eight months to present
844/05	M	21	Nov. 27, 1906	June 3, 1907	Both apices. Good condition	Good	Improving. Gone to Australia
1152/06	M	19	Nov. 20, 1906	May 4, 1907	Right apex. Good condition	Good	Certified free from tubercular disease
13/07	M	28	M'ch 19, 1907	Sept. 10, 1907	3 lobes. Good condition	Good	Stationary. Full work
124/07	M	35	April 9, 1907	Sept. 3, 1907	Both apices Good condition	Good	Improved then (?) losing. Full work
229/07	M	16	April 2, 1907	Sept. 10, 1907	Both apices. Good condition	Good	Improving. Full work
276/07	M	42	April 9, 1907	June 2, 1907	Both apices. Good condition	Good	Improving. Full work
673/07	M	23	July 2, 1907	Dec 3, 1907	Right apex. slight. Good condition	Poor	Lost ground. Re-admitted April, 1908

CROSSLEY SANATORIUM—*continued.*

Prog. No.	Sex	Age	Date of Admission	Date of Discharge	Condition on Discharge	Food, etc.	Subsequent reports on Patient's Health
737/07	M	26	July 30, 1907	March 10, 1908	Both apices. Fair condition	Good	Improving. Has worked six weeks
745/07	M	23	July 23, 1907	Nov. 26, 1907	Both apices. Fair condition	Good	Losing ground. Works, but easily fatigued
655/07	M	31	July 23, 1907	March 10, 1908	2 lobes and larynx. Good condition	Good	"Cured." Has worked six weeks
970/07	M	23	Sept. 3, 1907	Dec. 31, 1907	Both apices. Good condition	Good	Stationary. Full work
954/07	M	38	Sept. 3, 1907	Jan. 7, 1908	Both apices. Good condition	Good	Improving. Full work
1045/07	M	31	Oct. 15, 1907	April 18, 1908	Both upper lobes. Good condition	Fair	Improving. Has begun work
1057/07	M	32	Oct. 29, 1907	Dec. 10, 1907	Both apices and larynx. Disease extending	Poor	Worse. Unable to work
683/05	F	18	Aug. 1, 1905	Dec. 2, 1905	Both lungs. Good condition	Good	Improved. Full work.
816/03	F	18	Aug. 10, 1905	October 30, 1906	Both apices. Fair condition	Good	Very slow decline. Housework.
764/05	F	38	Aug. 29, 1905	Nov. 4, 1905	Both apices, slight. Larynx affected.	Good	Improving when last heard of.
953/05	F	18	Oct. 12, 1905	March 26, 1907	Both upper lobes. Good condition	Good	Improving. Full work.
1196/05	F	20	Dec. 12, 1905	May 17, 1906	Both lungs. Did not improve here	—	Admitted to Clayton in May, 1906. Some improvement
83/06	F	30	Feb. 6, 1906	April 9th, 1907	Left apex. Fair condition	Good	Improving.
298/06	F	16	April 3, 1906	October 23, 1906	Both apices. Fair condition	Good	Improved, and worked to February, 1908. Now falling off
403/06	F	19	May 1, 1906	October 23, 1906	Both upper lobes. Good condition	Good	Improved. Partial work.
1126/04	F	23	May 8, 1906	Dec. 3, 1907	Extensive disease. Fair condition	Only fair	Losing ground. Not working.
684/06	F	15	July 10, 1906	July 10, 1907	Right apex. Good condition	Good	Losing ground. Unable to work
753/06	F	32	Aug. 14, 1906	Sept. 11, 1906	3 lobes. Did not improve here	Good	Was admitted to Clayton, where she improved. Then re-admitted to Delamere Feb., 1908
1025/06	F	15	Nov. 13, 1906	July 23, 1907	Larynx affected. Disease extending in lungs	Good	No improvement
94/06	F	14	Mar. 19, 1907	May 21, 1907	3 lobes. Did not improve here	Good	Was admitted to Clayton, where she improved
245/07	F	38	April 9, 1907	Sept. 3, 1907	Lungs nearly clear	Fair	Then re-admitted to Delamere Feb., 1908
706/07	F	29	July 23, 1907	Oct. 22, 1907	3 lobes. Fair condition	Short	Improving. Partial work
583/07	F	25	June 18, 1907	Feb. 4, 1908	Both apices and larynx. Fair condition	Good	Worse. Gone to Union Hospital
362/07	F	37	July 23, 1907	March 10, 1908	Extensive disease. Condition bad	Doubtful	Losing ground
887/07	F	36	Aug. 20, 1907	Dec. 3, 1907	Both upper lobes. Fair condition	Fair	Had lost 12lbs by March 20, 1908



Table 13 shows the results of treatment in the Delamere Sanatorium and Bowdon Hospital, as given in the Annual Report of the Consumption Hospital for 1907.

TABLE 13.—SHOWING THE RESULTS OF TREATMENT OF PATIENTS ADMITTED IN 1907.

Patients admitted	DELAMERE			BOWDON			
	1st stage	2nd stage	3rd stage	1st stage	2nd stage	3rd stage	Total
Apparently cured .....	24	0	0	17	1	0	42
Much improved .....	21	11	2	25	35	3	97
Improved .....	14	24	13	12	39	8	110
Stationary .....	7	16	42	4	13	18	100
Worse .....	0	3	5	1	5	8	22
Died .....	0	2	1	1*	1	0	5
Total .....	66	56	63	60	94	37	376

\* This case, already noted under the heading of "operations," died of rapid Phthisis.

In previous reports expression has been given to the opinion that much poverty is caused by Phthisis, and that the work of the hospitals is marred in great measure because patients cannot be got to admit illness and seek relief at an early period because of the need for their services in maintaining the home.

There is needed some fund, to be worked in connection with the notification of Phthisis, preferably controlled by the Sanitary Committee, from which sufficient provision could be made for families to keep them at a fairly good level of nutrition during the treatment of the Phthisical member.

Until such provision is somehow made, cases will not be got early enough to present a good prospect of recovery, nor can the needful precautions be fully secured.

The following statement of the conditions existing in a large number of families containing a Phthisical member during 1907, and the synopsis thereof, both prepared by Mr. Lock, must carry conviction of the great need for assistance which exists.

There can be no doubt that effectual aid would greatly diminish the incidence of Phthisis.

I would commend this subject to your most earnest consideration.

Assuredly, no one can peruse the detailed statement here given without realising the poverty producing power of this disease, or without feeling an ardent desire to cope with the terrible conditions which it reveals.



TABLE 14, SHOWING THE INCOME OF EACH FAMILY, THE AMOUNT REQUIRED IN RENT, THE AMOUNT REQUIRED IN FOOD ACCORDING TO THE ATWATER SCALE, ASSUMING THAT THE RATIONS OF EACH ADULT MAN COST 6D., THE EXCESS OF THE REQUIREMENTS OVER THE INCOME OF THE FAMILY, ALSO PARTICULARS REGARDING THE HOSPITAL.

Prog. No.	Income		Rent		Food		Household Sundries		Relief said to be received		Shortage		Notes
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	
D 11/07	15	0	5	6	16	10	5	9	...	...	13	1	Patient taken to Clayton.
17/07	17	0	7	0	17	1	6	2	...	...	13	3	Do. to Delamere and Clayton.
19/07	15	8	4	3	10	10	4	5	...	...	3	10	Do. to Union Hospital.
D 27/07	15	0	4	6	17	10	6	8	...	...	14	0	
47/07	7	0	5	6	16	1	6	1	9	0	20	8	Taken to Delamere and Clayton.
D 63/07	20	0	8	0	14	7	5	1	...	...	7	8	Do. Bowdon.
73/07	7	0	4	11	12	3	5	0	...	...	15	2	
D 79/07	36	11	6	6	28	0	9	3	...	...	6	10	Taken to Union Hospital.
87/07	26	0	6	3	23	10	8	7	...	...	12	8	Removed; lost sight of.
D 97/07	15	0	4	3	14	0	5	7	...	...	8	10	Went to Union Hospital.
D 105/07	20	0	5	9	13	7	5	6	...	...	4	10	Do.
107/07	11	0	4	9	9	0	3	10	...	...	6	7	
D 109/07	18	0	5	7	12	7	5	0	...	...	5	2	
118/07	15	0	5	6	8	2	3	9	...	...	2	5	Went to Bowdon.
132/07	22	0	4	9	12	11	5	6	...	...	1	2	
D 137/07	11	0	4	0	11	2	4	6	...	...	8	8	
D 138/07	7	0	6	4	12	11	6	0	10	0	18	3	Went to Union Hospital.
D 142/07	17	0	5	0	12	3	4	5	...	...	4	8	Do.
166/07	0	0	4	0	8	0	3	9	6	0	15	9	Do.
176/07	12	0	(?) 6	0	17	10	6	3	6	0	18	1	Removed; lost sight of.

Those marked "D" are dead.

TABLE 14—continued.

Prog. No.	Income	Rent	Food	Household Sundries	Relief said to be received	Shortage	Notes
D 179/07	s. 21 0	d. 4 3	s. 15 0	d. 6 1	s. d.	s. d.	Went to Union Hospital.
D 185/07	22 0	5 3	15 4	5 7	...	4 4	
D 191/07	17 0	5 3	11 6	4 7	...	4 2	
D 195/07	0 0	4 0	15 9	6 9	2 0	4 4	Went to Union Hospital.
D 197/07	Small reserve, nearly done.	5 10	8 4	3 9	7 0	6 6	Do.
D 200/07	15 0	3 9	14 0	5 7	...	17 11	Went to Delamere.
D 203/07	23 8	6 4	20 0	6 4	...	8 4	
D 205/07	20 0	6 4	18 2	6 8	...	9 0	Went to Delamere.
D 206/07	7 0	4 7	11 2	4 11	...	11 2	
D 213/07	14 0	4 6	11 10	4 5	3 0	13 8	Went to Union Hospital
D 214/07	20 0	4 0	12 3	4 11	(?) +	6 9	
D 216/07	11 0	4 9	14 8	6 2	...	1 2	
D 217/07	20 0	6 3	22 2	7 0	...	14 7	
D 241/07	24 0	5 9	19 7	5 10	...	15 5	Went to Union Hospital.
D 245/07	22 0	4 9	14 4	6 1	...	7 2	Do. Delamere.
D 257/07	6 0	5 6	15 4	6 1	...	3 2	Patient and child went to Union Hospital.
D 258/07	22 0	6 6	14 1	5 6	...	20 11	Went to Union Hospital.
D 266/07	5 0	4 3	12 5	4 11	...	2 1	Do.
D 274/07	16 0	5 6	10 10	4 4	...	16 7	Went to Bowdon.
D 275/07	14 0	5 6	12 7	5 0	...	4 8	
D 276/07	17 0	7 0	11 7	7 3	...	9 1	
					...	8 10	

Those marked "D" are dead.

TABLE 14—*continued.*

Prog. No.	Income	Rent	Food	Household Sundries	Relief said to be received	Shortage	Notes
D 319/07	s. 10 0 d.	s. 4 9 d.	s. 17 2 d.	s. 6 6 d.	s. 9 0 d.	s. 18 5 d.	
323/07	10 0	4 0	17 0	6 8	...	17 8	Went to Union Hospital.
326/07	5 6	2 6	8 2	9 9	...	8 11	Do. Pendlebury Hospital.
329/07	26 0	6 6	21 0	4 4	...	7 10	
D 332/07	18 0	4 6	11 9	0 0	...	3 3	Went to Union Hospital.
334/07	0 0	5 0	14 4	1 1	7 0	25 5	Do.
D 346/07	31 0	6 0	21 0	0 0	...	3 0	
350/07	5 0	4 0	12 11	6 6	6 0	17 5	Went to Union Hospital.
D 360/07	0 0	3 9	11 6	6 6	+ 6 0	20 9	Patient and 2 children went to ditto.
374/07	12 0	4 9	13 4	0 0	3 0	11 1	Went to Union Hospital
381/07	10 0	4 9	11 2	0 0	3 0	11 11	Do.
384/07	6 0	6 6	10 1	5 5	4 0	15 0	Went to Clayton Hospital.
386/07	14 0	7 6	15 4	1 1	...	14 11	
409/07	8 0	4 0	14 8	1 1	...	16 9	Went to Clayton Hospital.
D 424/07	6 0	4 6	16 1	1 1	5 0	20 8	Do. Union Hospital.
D 427/07	10 0	6 0	12 7	6 6	...	14 1	
D 429/07	28 6	5 6	21 0	9 9	...	4 9	
D 431/07	14 0	4 6	12 3	5 5	...	7 2	Went to Union Hospital.
437/07	18 0	6 4	15 9	7 7	...	9 8	
D 445/07	11 6	3 9	15 4	2 2	...	12 9	Went to Union Hospital
463/07	12 0	4 0	13 7	6 6	...	11 1	
467/07	15 0	4 3	11 10	0 0	...	6 1	

Those marked "D" are dead.



TABLE 14—*continued*.

Prog. No.	Income	Rent	Food	Household Sundries	Relief said to be received	Shortage	Notes
469/07	s. 10 0	d. 6	s. 11 2	d. 5	s. d.	s. d.	Went to Union Hospital.
472/07	0 0	5 6	10 1	5 5	...	10 1	Do. ; lost sight of.
473/07	19 6	4 6	14 0	5 7	...	20 0	
474/07	20 0	4 6	12 3	5 6	...	4 7	
511/07	14 0	5 0	11 10	4 11	...	2 3	
515/07	0 0	2 6	6 3	3 2	3 0	7 9	
517/07	30 0	7 6	26 10	8 8	...	11 11	Went to Union Hospital.
529/07	7 6	5 6	14 0	5 0	...	13 0	Do.
545/07	31 0	4 9	21 8	6 10	...	17 0	Went to Sunnyside.
547/07	23 0	8 6	21 8	6 3	...	2 3	Do. Union Hospital.
561/07	11 0	6 4	21 0	7 4	...	13 5	Do. Bowdon.
562/07	5 0	4 9	13 4	5 6	8 0	23 8	Do. Union Hospital.
564/07	15 6	7 0	12 7	4 7	...	18 7	
572/07	19 0	6 6	16 1	6 8	...	8 8	
594/07	21 0	5 0	12 3	5 0	...	10 3	
600/07	18 0	7 0	17 8	7 7	(+)	1 3	Went to Union Hospital.
612/07	6 0	5 0	13 3	5 6	9 0	14 3	Do.
624/07	0 0	5 0	14 6	6 1	3 0	17 9	Patient went to Sunnyside; one child taken by relative.
649/07	19 0	5 3	14 8	5 6	...	25 7	
653/07	12 0	4 3	10 7	4 1	...	6 5	
658/07	19 0	4 9	14 8	5 1	...	6 11	
						5 6	

Those marked "D" are dead.

TABLE 14—continued.

Prog. No.	Income	Rent	Food	Household Sundries	Relief said to be received	Shortage	Notes
673/07	s. 15 0	d. 8 0	s. 12 7	d. 4 6	s. d.	s. d.	Went to Delamere.
D 680/07	34 0	9 0	23 5	7 1	...	10 1 6	
D 685/07	26 0	4 6	19 1	6 10	...	5 4 5	Went to Union Hospital.
D 686/07	16 0	5 0	14 0	6 1	...	9 1	
D 693/07	0 0	3 9	8 9	4 4	4 0	16 10	Went to Union Hospital.
D 698/07	12 0	5 9	9 1	3 10	...	6 8	Do. Bowdon.
711/07	15 0	4 8	18 10	6 9	...	15 3	
727/07	9 0	5 9	15 11	6 2	3 0	18 10	Went to Delamere.
730/07	8 0	4 9	9 5	4 10	6 0	11 0	Do. Clayton.
736/07	16 0	4 3	18 10	6 3	...	13 4	Do. Union Hospital.
763/07	0 0	3 6	10 1	4 4	7 0	17 11	Do. Bowdon.
774/07	14 0	4 6	13 0	5 0	...	6 6	
D 802/07	10 0	5 0	8 9	4 4	...	8 1	Went to Clayton Hospital.
D 809/07	7 0	5 0	7 8	3 9	...	9 5	
D 810/07	6 0	3 6	12 3	5 0	3 0	14 9	Went to Union Hospital.
D 814/07	17 0	4 0	15 9	4 1	...	6 10	Do.
D 819/07	0 0	4 0	13 4	5 6	6 0	22 10	Do.
D 849/07	7 0	6 4	14 0	5 7	6 0	18 11	Do.
855/07	24 0	4 6	16 9	6 2	...	3 5	
857/07	7 0	3 9	10 6	4 5	5 0	11 8	
D 858/07	(?) 3 6	4 6	11 6	4 11	5 0	17 5	Went to Union Hospital.
867/07	15 0	3 9	10 10	4 4	...	3 11	

Those marked "D" are dead.

TABLE 14—continued.

Prog. No.	Income	Rent	Food	Household Sundries	Relief. said to be received	Shortage	Notes
868/07	s. d. 19 0	s. d. 4 9	s. d. 15 0	s. d. 4 4	s. d. ...	d. 1 8	Went to Delamere.
873/07	18 0	6 4	11 10	4 6	...	4 3	
876/07	15 0	5 6	10 10	4 11	...	6 4	
877/07	16 0	7 0	10 6	3 10	...	5 4	
888/07	15 0	5 6	8 0	4 9	...	3 3	Went to Delamere.
905/07	14 0	8 6	16 3	6 8	(+)	5 5	Do. Union Hospital.
914/07	10 0	5 9	9 1	3 10	...	17 8	
925/07	14 0	3 6	8 4	3 9	...	1 7	
934/07	13 0	4 6	14 8	5 6	6 0	11 8	
966/07	17 0	6 4	19 7	6 10	...	15 9	Went to Clayton.
968/07	10 0	5 5	11 10	4 6	...	11 9	Do. Union Hospital.
1008/07	8 0	4 6	10 1	4 4	...	10 11	
1009/07	5 0	5 0	5 3	3 8	6 0	8 11	
D 1015/07	14 6	7 0	10 1	4 4	...	6 11	Went to Union Hospital.
D 1025/07	23 6	4 0	17 1	6 2	...	3 9	
1046/07	3 0	5 6	13 9	6 8	7 0	22 11	Went to Union Hospital.
D 1049/07	10 0	8 6	11 10	5 6	...	15 10	Do.
1054/07	10 0	6 3	14 0	5 7	...	15 10	Removed.
D 1063/07	8 0	4 3	7 8	3 9	2 6	7 8	
1104/07	8 0	5 6	7 4	3 9	...	8 7	Removed; relief refused; only one child.
D 1162/07	9 0	3 0	11 6	4 11	...	10 5	

Those marked "D" are dead.



TABLE 14—*continued.*

Prog. No.	Income	Rent	Food	Household Sundries	Relief said to be received	Shortage	Notes
1193/07	s. d. 0 0	s. d. 2 0	s. d. 7 0	s. d. 3 9	s. d. ... 4 0	s. d. 12 9 21 2	Removed. Went to Union Hospital.
1199/07	5 0	4 9	15 4	1 1	...	12 1	Relief refused; went to Union Hospital.
1200/07	10 6	7 0	11 2	4 5	...	8 9	Went to Ancoats Hospital.
D 1202/07	15 0	4 6	14 2	5 1	...	9 5	Do. Union Hospital.
D 1217/07	12 6	4 9	12 3	4 11	...	2 1	Do. Delamere.
1219/07	18 0	6 4	9 5	4 4	...	3 9	
1221/07	20 0	5 4	12 11	5 6	...	9 0	Left Manchester.
1226/07	20 0	5 3	17 1	6 8	...	9 10	Went to Union Hospital.
1232/07	10 0	4 9	10 8	4 5	...	4 4	
D 1233/07	10 0	4 11	6 3	3 2	...	5 4	Went to Union Hospital.
1234/07	16 0	4 6	11 10	5 0	5 0	20 9	Do.
D 1238/07	0 0	5 0	10 10	4 11	...	7 7	Went to Delamere.
1247/07	22 0	5 0	17 10	6 9	...	25 8	Do. Union Hospital.
D 1264/07	10 0	5 0	22 9	7 11	...	6 9	
1265/07	17 0	7 0	11 10	4 11	...	9 2	
1278/07	5 0	4 9	6 3	3 2	...	22 3	Went to Union Hospital.
1305/07	2 0	5 0	14 0	5 3	7 0	9 1	Do.
1306/07	(?) 30 0	(?) 5 6	25 8	7 11	...	4 6	
1308/07	18 0	5 0	12 6	5 0	...	24 3	Went to Union Hospital.
1334/07	0 0	4 0	15 0	5 3	7 0	5 11	
D 1340/07	13 0	6 3	9 1	3 7	...	18 3	Went to Union Hospital.
D 1363/07	0 0	4 6	9 5	4 4	.6 6		

Those marked "D" are dead.

TABLE 14—continued.

Prog. No.	Income	Rent	Food	Household Sundries	Relief said to be received	Shortage	Notes
I365/07	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
D I379/07	0 0	6 6	6 3	3 2	...	15 11	Went to Sunnyside.
I399/07	4 6	4 9	13 7	5 6	(+)	19 4	
I400/07	15 0	6 9	11 10	4 6	...	8 1	Went to Clayton.
I402/07	0 0	4 9	15 9	6 9	8 0	27 3	Do. Union Hospital.
D I423/07	9 0	4 0	16 9	5 8	4 0	17 5	Do.
I425/07	15 0	4 9	9 9	3 10	...	3 4	
D I436/07	0 0	5 6	12 7	4 8	(? +)	22 9	Went to Union Hospital.
I440/07	8 0	4 0	7 8	3 9	...	7 5	
I442/07	24 0	5 6	16 1	6 2	...	3 9	
I447/07	21 0	5 6	17 6	6 9	...	8 9	Went to Bowdon.
I482/07	20 0	4 9	17 6	5 8	...	7 11	Do. Union Hospital.
D I499/07	15 6	4 6	16 3	6 2	...	11 5	Do.
D I502/07	10 0	6 0	11 2	4 5	...	11 7	
D I533/07	15 0	3 3	13 3	5 0	3 0	8 6	Went to Union Hospital.
I540/07	0 0	4 2	7 8	3 9	...	15 7	Refused to go to Hospital.
I542/07	10 0	4 9	9 5	4 4	...	8 6	
I558/07	0 0	2 0	8 9	4 4	5 0	15 1	Went to Union Hospital.
D I564/07	20 0	5 6	21 0	6 4	...	12 10	Do.
D I569/07	15 0	5 6	9 1	3 10	...	3 5	Do.
D I589/07	20 0	5 0	15 4	5 7	...	5 11	Do.
	6 0	4 0	9 1	4 4	...	11 5	Do.

Those marked "D" are dead.

TABLE I5 GIVES A SUMMARY OF TABLE I4, SHOWING PARTICULARS CLASSIFIED ACCORDING TO THE REQUIREMENTS OF THE FAMILY IN EXCESS OF THE INCOME.

SHORTAGE UP TO — IN SHILLINGS.

Number	—5	—10	—11	—12	—13	—14	—15	—16	—17	—18	—19	—20	—25	25+	Total
Alive, June 1st, 1908 ..	17	29	4	8	5	2	2	8	1	7	4	..	8	3	98
Dead .....	16	25	1	4	2	2	4	3	2	2	3	1	5	2	72
Removed to Union Hospital .....	10	14	1	6	3	2	2	3	2	6	3	..	10	4	66
Removed to Delamere Sanatorium .....	4	2	1	..	..	1	..	..	..	1	1	..	1	..	11
Removed to Bowdon ..	2	3	..	..	..	1	..	..	..	1	..	..	..	..	7
Removed to Clayton Hospital .....	..	2	..	1	..	2	..	2	1	..	..	..	1	..	9
Removed to Sunnyside or elsewhere .....	..	2	..	..	..	..	..	1	..	1	..	..	1	..	5
Relief received	1	2		6		1	2	2	1	5	8	1	10	4	45



## MILK AND TUBERCULOSIS.

I beg to submit my report on the work done during the year 1907.

The duties I was appointed to carry out are—(1) Inspection of Manchester Cowsheds and Dairies as to compliance with the Manchester Regulations made under the Dairies, Cowsheds, and Milkshops Order; (2) to act as Veterinary Inspector in the working of the Milk Clauses contained in the Manchester General Powers Act, 1899

### *Manchester Cowsheds.*

These number 199 on 106 farmsteads, and house about 1,750 cows. This number includes the whole of the City area, and can only be approximate, as the ordinary fluctuations in trade affect the numbers of cows kept in the City at any one time.

In the course of the regular inspection of the City farms, 595 visits have been paid and 1,046 inspections of cowsheds carried out. The total number of inspections of cows is 11,507. This shows, of course, that the cows are repeatedly inspected, but the regular inspection is not made with the same amount of repetition in all cases, as some of the dairymen require very little supervision, and my time is better employed in calling more often upon those who are most likely to fall off in their attention to the general cleanliness and supervision of their premises and animals.

The general conditions of the milk-producing trade within the City remain very much as they were last year, and I do not know that, except in some details, this trade has not attained as high a position as it is likely to do under the present conditions, and while the price of milk remains so low in many districts. The competition and cutting of prices to, in many cases, an irreducible minimum, is a most serious factor in retarding the attainment of those conditions of dairying in all its branches which we are all so anxious to see. Then, again, insecurity of tenure of farms is not conducive to inducing farmers—even those who can afford to do so—to lay out capital with which to establish their business on scientific principles, when they know that the premises and land which are in their occupation may be taken from them for building purposes at comparatively short notice.

The question of obtaining a sufficiency of capable labour is also a serious difficulty. There is, of course, plenty of labour of a kind to be had; but from my experience a large number of the individuals who apply for work at the farms situated mostly close to the City boundaries are degenerates, who require more supervision than their services are worth. There are, of course, a number of the deserving unemployed who apply, but their value to the farmer is very small, and the remuneration corresponding low. The farmer cannot afford to

extend his philanthropy to the extent of allowing such individuals to practice, and perhaps attempt to learn, milking for the first time on possibly his best milking cows. Those who know anything about the extraordinary ease with which the milking properties of a cow may be spoiled will appreciate this difficulty.

I am glad to say that the standard of health and cleanliness has been well maintained during the year. There have been very few causes for complaint of any moment.

The farmers realise that, if prosecution should follow any serious lack of observance of the regulations, the penalty is a very great one, and does not cease with the payment of the fine imposed, but would result in a loss of business which would be very difficult to overtake, so that where admonition is necessary a threat of prosecution is quite sufficient to correct what is, as a rule, only a temporary lack of attention to details.

New-comers into the City do not at first appreciate the supervision which is exercised, but after a time they realise, like the rest, that the regulations must be observed. This is particularly the case with people who have had little or no experience of dairy farming prior to coming into the City; they often pay somewhat fictitious values for the milk-rounds which they purchase, and naturally resent it when informed that certain structural alterations are necessary before the premises can be made to comply with the sanitary requirements laid down. In one particular case where such a change of tenants took place, a very considerable sum was paid for the good-will of the business, and the stock, implements, etc., were taken over under a valuation. On a statement by the vendor, supported by the agents for the property, the present tenant was induced to purchase the business; while, as a matter of fact, the first tenant merely removed because of the pressure that was brought to bear to secure reconstruction. An attempt is made, of course, to protect such people, but in this particular case, and in others, the new tenant has entered into occupation before there was any suggestion to me of the old one leaving. I merely mention this matter as it is a very serious business for those people who propose acquiring a town dairy or farm, because they are under the impression that the business is a particularly lucrative one, and it is often a fact that a number of these people turn to this branch of dairying as a last resort, only to find that their responsibilities are greater than ever they were.

During 1897 the reconstruction of the premises was completed in one case, and in three others plans and specifications to show how such reconstruction should be carried out were issued. I must again enter a plea on behalf of the establishment of some uniform and proper method of construction and reconstruction of all premises for the habitation of cattle. The haphazard and unsatisfactory methods which are in vogue in a number of districts are most unsatisfactory.



and I consider it is unfair to call upon people to carry out expensive work which on completion is found to be very little, if any, better than the structures which they replace.

During the year one cowshed was closed, the cost of reconstruction being found to be prohibitive in view of the small accommodation provided.

I regret to report again that there is no increase of conveniences for cooling milk, nor is there likely to be so long as the public demand for warm milk remains as great as it is. One incident occurring during the year emphasises the high estimation in which warm milk is held by the public. A dairyman who only kept four cows was asked, in view of his having such a large business, whether it was worth his while to continue keeping these cows, and he replied that it certainly was, as when he was canvassing for new customers he always sent a pint of this milk as a sample, and it rarely failed in its object of obtaining the trade of such new customers. Doubtless these people imagined that all the milk subsequently purchased was fresh from the four cows kept. There is little doubt that this is the only reason for some of the smaller dairymen keeping cows as they do.

The methods of filtration of milk remain as in the past, and although I continue to urge farmers to purchase appliances which will separate the heavy dirt from the milk more efficiently, it seems useless to do so.

#### *Manchester Cows.*

During the year 1907, 11,501 examinations were made of the cows kept in the cowsheds within the City boundaries. The estimated number of cows housed in the City is 1,750.

The class of cattle kept is maintained at a fairly high standard, and very little fault can be found. Occasionally it has occurred that cows quite unsuitable have been purchased, but it has been quite sufficient for me to tell the farmer what my opinion is of the animals. I do not mean that I needlessly condemn animals because they may happen to be poor in condition, as a good many of the cows bought at first are, but if any suspicion is directed to a certain animal then a very careful examination is made, and, if necessary, where nothing definite can be found, the animal is kept under observation; but as a rule few cows remain under observation, as in most cases the farmer prefers to dispose of them as soon as he becomes aware that I am in the slightest degree suspicious of them.

The cleanliness of these cows has been well maintained, and partial grooming is fast becoming a routine procedure in most cowsheds.

One case of tuberculosis of the udder was discovered during the year, the animal being slaughtered two days after it was found. There was no question of the meat being found fit or unfit for food, as the farmer decided to at once



send the cow to a knacker, and as soon as possible after removal disinfected the cowshed in which she stood.

Perhaps systematic disinfection may come into favour eventually, but at present it is difficult to obtain its general adoption, unless after a case such as that just mentioned. I am of opinion that it should be compulsory prior to the half-yearly limewashing.

### *The Manchester Milk Clauses.*

No changes have been made in the methods of working the Milk Clauses of the Manchester General Powers Act, 1899.

Samples of milk are obtained at the Manchester and other railway stations, or elsewhere within the City, by the Food and Drug Inspectors. These are submitted to Professor Delépine for bacteriological examination. All samples reported by him as having been found to cause tuberculosis are followed to their source at the farm by the Medical Officer of Health (or his representative) and the Veterinary Surgeon.

The Veterinary Surgeon examines all the milking cows on the farm, and takes separate samples from cows having diseased or suspicious udders. The special as well as the mixed samples are taken in sterilised bottles provided by Professor Delépine, and every care is taken to avoid extraneous infections. These samples are, in turn, submitted to Professor Delépine for bacteriological examination, and in this way the fact of a cow having tuberculosis of the udder is definitely ascertained. Samples from cows found by clinical examination to have diseased or suspicious udders, without previous mixed station samples, are collected and examined in the same way.

In all cases a control sample is taken to ensure that the examination has been satisfactorily completed, and that every source of infection has been removed.

### *Tuberculous Milk.*

It has been stated earlier in the report that during the year 11,501 inspections were made of cows housed within the City boundaries, and that one cow suffering from tuberculosis of the udder was found.

During the year 700 samples of mixed milk have been taken by the Food and Drug Inspectors in connection with tuberculosis; of this number 672 were taken at the railway stations and the remainder taken from the carts coming in by road. The number of farmers represented in this total is 562.

Of these 562 farmers, 350 reside in Cheshire, and 27 of them (7·71 per cent.) sent tuberculous milk; 67 live in Derbyshire, and 3 of them (4·48 per cent.) sent tuberculous milk; 72 live in Staffordshire, and 5 of them (6·94 per cent.)

sent tuberculous milk ; 54 live in Lancashire, and 2 of them (3·70 per cent.) sent tuberculous milk ; 8 live in Shropshire, and 1 of them (12·5 per cent.) sent tuberculous milk ; 10 live in Yorkshire, and none sent tuberculous milk.

The numbers given of farmers whose milk was examined will be seen to be considerably less than the number of samples taken during the year, showing that in some cases certain farmers' milk has been examined more than once. The taking of the samples of milk is most carefully supervised so as to prevent unnecessary repetition, and this can be effectually done by means of the registers kept by Mr. Lock, who from time to time issues to the Inspectors lists of names of farmers who are either new on his lists or whose milk has escaped for some time. As stated before, no attempt is ever made to deal with milk from separate districts in turn, as there is little doubt that when such a procedure is adopted, the farmers' attention is drawn to it, and although a number of tuberculous samples may be obtained, it will be found on arrival at the infecting farms, that in most cases the infecting animal has been removed, with the result that nothing can be done, whereas in those cases where a cow suffering from tuberculosis is discovered, the subsequent administrative measures are much strengthened, and leave a lasting impression on the farmer, whose supervision of the general health of his herd is likely to be much more thorough.

From returns supplied, chiefly by the farmers themselves, the estimated number of cows at the 562 farms from which the milk was subjected to examination is 11,435, being an average of just over 20 cows per farm. During the year the udders of 2,547 cows at the country farms have been examined for tuberculosis. Of the milk tested by Professor Delépine from these 562 farms, 38 were found to cause tuberculosis, giving a percentage of 6·76 farms sending tuberculous milk.

As a result of following up the tuberculous mixed samples, 28 cows were found and proved to be suffering from tuberculosis of the udder. 21 of these cows were slaughtered in my presence, or I examined the carcass soon after ; in 5 cases the entire carcass was passed as fit for food ; in two cases portions of the carcasses were passed ; in the remaining 14 instances the whole carcass was condemned. This leaves seven cows to be accounted for, and of these one was ascertained by me to have died, and the remaining six were not traced, although efforts to do so were made by writing to the farmer, but even if a reply is received stating the name of the person to whom the cow has been sold, the supposed purchaser did not reply to the enquiry. It is, as a rule, pretty safe to say now that such cows are sent outside our areas, and are not likely to become a source of infection to Manchester consumers again. In addition to the above 28 cows, found as the result of following up the infective mixed milk, one cow notified was proved to have tuberculosis of the udder. She was shortly after sent to the knackers, where I made a post-mortem and found the disease generalised. This was a young animal, only two years and four months old.



Two prosecutions were instituted during the year under the Milk Clauses for failure to notify to the Medical Officer of Health the presence of animals showing marked signs of disease of the udder. The cases were heard at the City Police Court, and a fine of 40s. and costs, and £2 2s. extra costs, imposed in each case; a point of law was raised by the solicitor for the defendant, and the Stipendiary agreed to state a case, but no appeal was entered.

Further, in three cases orders were made upon farmers during the year requiring them to cease sending milk to the City until such time as they are able to show to the satisfaction of the Medical Officer of Health that the milk supply has been changed, or that it is not likely to cause tuberculosis to persons residing within the City.

These cases all bear a close resemblance to one another, inasmuch as in the first instance at two of the farms one cow suffering from tuberculosis of the udder was found at each place, and in the third case two such diseased cows were found. The housing conditions were insanitary to a degree, and in addition I was able to satisfy myself by clinical examination that a fair percentage of the remaining cows on each farm were suffering from tuberculosis. That a certain amount of hardship is inflicted by the imposition of the prohibitory order is certain, but it is equally certain that in such herds as these it is of little permanent use to remove merely those animals in which tuberculosis has extended to the udder, when at any time one or other of the remaining cows may develop the disease in the udder. In such cases everything possible is done to get a complete reconstruction of the insanitary cowsheds, and to, as far as possible, purge the herds of those animals which present clinical signs of disease. Incomplete as such a procedure is, if the two improvements go together—the provision of a fairly healthy herd, housed in a good sanitary cowshed—it may fairly be expected that from being a source of danger the milk from such a farm might be regarded as comparatively safe. Beyond this the educational effect of the presence of such a good farm in a district is of great value, especially if the landlord can be induced to carry out the work thoroughly, and on the lines recommended. It may be, and is, contended that the methods of construction in vogue in Manchester are extreme, and many hold the opinion that to ask for 600 or 800 cubic feet of air space per cow is too much, but in my opinion much of this has been due to the fact that many modern cowsheds are ventilated in such a manner as to make the attainment of a fairly equable temperature in cold weather a matter of extreme difficulty, and naturally farmers fear the effects.

I am certainly of opinion that in making recommendations for ventilating a cowshed, only in exceptional cases should windows be considered as ventilators, for it is almost impossible to make farmers keep the windows open. The practice in Manchester has been to entirely disregard the windows as factors in the ventilation of a shed, and to provide, after due calculation, a separate



system of inlets and outlets, so arranged to give a slightly larger amount of area for inlet than for outlet. This has been found to work very well in the City, and also at some of the country farms, where the suggestions have been adopted. I am convinced that the cow-keeper's objection to a reasonably large cubic area can be overcome when he understands that the building can be ventilated without causing it to be continually cold and draughty. I mention this question of ventilation because it is apparent to me from very many conversations which I have had with farmers, that practically the whole of their objection and opposition to reform in the structural conditions of their cowsheds is based upon the fear of provision of ample air-space, as they have seen it. There are certain other details in connection with the building of cowsheds which are of interest, but which must be omitted here.

Of the three cases mentioned in which orders were made, the landlord has in one case given an undertaking that the whole of the suggested alterations will be carried out by August 31st, 1908, and on receipt of this undertaking the Hospitals Sub-Committee agreed that the operation of the order made should be suspended until that date. In one of the other two cases the landlord is considering what he will do, but in the third case nothing will be done, the farmer having found another market to send his milk to.

It has been usual to insert a table showing the percentage of tuberculous milk sent into Manchester from 1901 inclusive. The figures for 1907 are given, and the table is again attached.

TABLE I.

YEAR	Number of farmers' milk tested during the year	Total number found to cause Tuberculosis in the experimental animal	Percentage of farmers sending Tuberculous milk	Percentage of farmers from EACH COUNTY whose milk was found to cause Tuberculosis.					
				Cheshire	Derbyshire	Staffordshire	Shropshire	Lancashire	Yorkshire
1901	272	27	9·9	10·46	9·23	8·00	10·00	...	...
1902	345	36	10·4	12·72	8·65	4·01	...	8·31	...
1903	329	45	13·6	14·76	9·58	15·15	40·00	...	...
1904	318	29	9·1	11·17	6·02	...	...	7·14	25·00
1905	565	47	8·3	10·26	6·00	6·38	...	2·98	12·50
1906	542	42	7·7	8·6	6·5	9·3	12·5	4·0	...
1907	562	38	6·76	7·71	4·48	6·94	12·5	3·70	...

It will be seen that the reduction commenced in 1904 is maintained, and that the amount of infective milk arriving in the City is less than half what it was in 1903, when 13·6 per cent. of tuberculous milk was sent into the City. The diminution of the infective milk to its present quantity has, as reference to the table will show, been gradual but continuous. We may consider these figures as reliable evidence of all-round improvement; that is to say, there is more careful supervision, lowering of the average age at which cows are removed from dairy stock, and careful attention to the various udder conditions which arise from time to time. No doubt, as has previously been stated, many more cows than those actually suffering from tuberculosis of the udder are removed, but so far as the farmers are concerned, this is to a very great extent their own fault, as they will not make use of the Notification Clause in the Milk Clauses, but prefer to rely on themselves, although an increasing number are employing their private veterinary advisers to make periodical examinations of their cows. So far as plainly diseased cows are concerned (I mean those that are commonly described as “wasters”), I cannot say that I have seen more than about a dozen during the year. This in itself marks a great improvement in the supervision of dairy stock. It does not follow that the number of cattle suffering from tuberculosis is very materially diminished, but it would indicate their removal at a much earlier period.

As is the case with the farmers in the City, all country farmers visited are advised to practise periodical disinfection of their cowsheds, and there is no doubt that in a good many cases the advice is followed for a time, but the farmers are not persistent enough to carry it on regularly.

Other matters which I have reported upon in previous reports as showing little or no improvement remain much in the same position. I refer to methods of storing manure, provision of proper appliances for the efficient cleaning of milk cans, and to the character and position of the appliance in use for the cooling of milk.

The inspection of railway milk-vans as to cleanliness has been regularly carried out.

#### *Tuberculin Test.*

The complete table showing the application of the tuberculin test to the cows from which milk is supplied to Monsall and Clayton Hospitals is again inserted. It will be seen that the work of keeping this herd free from tuberculosis is being successfully carried on.

TABLE II.

Below is presented a table showing the actual results of each application of the test:—

Date of Test	Total Number Tested	MILKING HERD. Animals having been previously tested				PROBATIONARY ANIMALS. Animals not previously tested, but purchased subject to passing the test				Total Number of Animals Passing Test
		Number Tested	Number Re-acting	Number Passed	Doubtful Re-actions	Number Tested	Number Re-acting	Number Passed	Doubtful Re-actions	
October, 1902.....	101	91	11	80	0	10	4	6	0	86
April, 1903.....	108	88	3	85	0	20	6	13	1	98
October, 1903.....	108	98	1	96	1	10	4	5	1	101
April, 1904.....	103	76	0	76	0	27	10	17	0	93
October, 1904.....	103	85	0	84	*1	18	4	13	1	97
April, 1905.....	102	87	0	87	0	15	4	11	0	98
October, 1905 .....	98	84	0	84	0	14	5	9	0	93
April, 1906.....	107	91	0	91	0	16	6	10	0	101
October, 1906 .....	102	73	1	72	0	28	7	21	0	94
April, 1907.....	132	95	0	95	0	27	19	8	0	103
October, 1907 .....	119	81	0	81	0	28	13	15	0	96

\* Animal tested, but developed Bronchitis during test.



*Details of Individual Cases.*

Only those cases which present features of interest are dealt with in the following :—

Case 319.—This cow was found in the usual way on May 7th, 1907. On arrival the farmer stated that I had no business on his premises, and that the sooner I left the better it would be for me, as he no longer sent milk to Manchester (his previous experience having been enough), and that his milk was only sent to Mr.—— on a definite agreement that none was to be sold in the City. It was pointed out that this statement could not be accepted, as we were informed that the sale of this milk had not been restricted to the neighbouring urban district to which it had been consigned. The farmer then observed : “ I know you have no right here, but I can show you the cow with the bad udder at once.” On examining the cow, which showed well-marked signs of disease, I remarked to the farmer that she must have exhibited evidence of udder disease for some time, and his reply was that to the best of his recollection he had first noticed that she “ was going the wrong road in her bag ” in the previous October—seven months previously.

The statement of the farmer as to agreement with the milk dealer was practically confirmed, except that the dealer stated he had no agreement, there being merely an understanding, and further that he had observed the condition and had sold none of the milk in Manchester.

On these facts being communicated to the Medical Officer of Health, he immediately wrote to the Medical Officer of Health for the Urban District, to Dr. Garstang, and also to Dr. Vacher.

On May 17th, 1907, Dr. Garstang wrote : “ The cow has been killed. I have seen the carcase ; lungs, liver, and udder all tuberculous. It has been buried.”

It should be stated that a year previous to this visit, this farmer's milk was also tuberculous, and on the farm being visited he informed me that he would not be bothered in future by inspection and having his cows examined, but would send his milk elsewhere.

Case 336.—The two cows in this case were found when following a tuberculous mixed sample supplied from the farm, and collected at the railway station.

I reported as follows at the time : “ In company with the representative of the Medical Officer of Health, I visited this farm and examined 21 cows in two dark, dirty, and unventilated cowsheds.”

“No well-marked case of Tuberculosis of the udder was found, but this herd is far from being a satisfactory one, the cows being wanting in condition, which is accounted for by the farmer as being due to the inclement weather during the summer. This may or may not be a genuine excuse, but I formed the opinion at the time of my visit that some of the animals are of a distinctly tuberculous type, and would prefer to see them again before giving a definite opinion.”

Two cows were found showing signs of disease of the udder, one of these cows being a definite advanced case of pulmonary tuberculosis.

This last cow was left out in the fields when the remainder of the cows were brought in, and the farmer at first declined to bring her in, saying that she was not one of the milking herd, and that her condition was due to a serious injury to her back, incurred by falling into a pit three days previously. Further, that it would be a physical impossibility to get the cow into the shed, as she could not walk that distance up hill. I, however, proceeded to the field myself, and insisted on opening the gate to let the cow out, when she immediately made for the building, where she was tied up. On further examination, I could find no evidence whatever of the injuries mentioned, nor any evidence of the rough handling which she would receive in the process of getting her out of the pit. I had, however, no difficulty in coming to the conclusion that she was suffering from advanced tuberculosis.

On visiting the farm again later, I was informed that the roan cow had died about a week subsequent to my visit, and had been buried ; the second cow was still on the farm, and the farmer was trying to fatten her. I also examined the remainder of the cows, and came to the conclusion that my first opinion that this was a badly infected herd was correct.

In view of the bad housing and diseased character of the herd, the Medical Officer of Health reported to the Hospitals Sub-Committee that he was of opinion that tuberculosis was likely to be caused from consumption of this milk. The farmer was summoned to appear before the Committee, and an order to cease sending to the City was made upon him.

Subsequently I saw the agent for the estate on which this farm is situated, and he gave an undertaking that the complete reconstruction of this farm would be carried out on the lines suggested. In view of this undertaking the order was suspended to allow of the completion of the work.

Case 343.—The cow in this case was discovered in the usual manner. This herd was not a satisfactory one, and was housed under the most insanitary conditions.

On the usual recommendation from the Medical Officer of Health, the farmer was summoned to appear before the Committee to show cause, etc.

In the interim the Medical Officer of Health himself visited the farm, accompanied by the Veterinary Surgeon, and inspected the whole of the premises.

The farmer attended before the Committee, and a deputation from the Manchester and Salford Milk Dealers' Association also attended to urge upon the Committee the extreme inconvenience to which the milk dealer would be put if a summary order were to be imposed at once, in view of the fact that at this period of the year milk was scarce, and it was not possible to get another farmer's milk without some trouble. In view of this statement the Committee agreed that the order should not come into force for a month from the date of the meeting.

The landlord in this case declined to do anything for the farmer. On the order coming into force it was ascertained that the milk was being sent into another town.

[ Case 346.—In this case the farmer was prosecuted for having failed to notify to the Medical Officer of Health the fact that he had in his herd a cow suffering from marked tuberculosis of the udder.

The general conditions of the farm being bad, and the herd unsatisfactory, the farmer was summoned before the Hospitals Sub-Committee, and a prohibitory order imposed. It is possible that the owner may in this case carry out reconstruction of the cowsheds.



The following table of samples submitted in connection with the Manchester Milk Clauses summarises the work of the year :—

1907.

Number of specimens of mixed milk taken at the station	672	
Number of specimens of mixed milk elsewhere	28	
Number of each found to contain tubercular infection	Station 36 Elsewhere 2	In addition, 30 control samples were taken at the stations, of which 10 were proved capable of causing Tuberculosis.
Number of farms visited in consequence	40	Additional 3 visited as result of notification or otherwise.
Number of specimens taken from individual cows as result of following up station and other samples	103	And 1 mixed sample.
Number of milks from individual cows proved to be tuberculous out of those given in the preceding column	29	
Number of udders proved to contain tuberculous lesions	29	
Number of milks taken from individual cows as the result of <i>notification</i> or <i>otherwise</i> than owing to the presence of tubercle bacilli in mixed milk	3	
Number of udders in last column shown to be tuberculous by bacteriological examination	1	
Total number of specimens submitted for examination	836	

J. W. BRITTLEBANK,

M.R.C.V.S., D.V.S.M.

# THE FACTORY AND WORKSHOP ACT, 1901.

I beg to submit a statement of work done under this Act on the Form issued by the Home Office :—

## FACTORIES, WORKSHOPS, LAUNDRIES, WORKPLACES, AND HOMEWORK.

### I.—INSPECTION.

*Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.*

Premises	Number of		
	Inspections	Written Notices	Prosecutions
Factories (including Factory Laundries) and Bakehouses Workshops (including Workshop Laundries) and Bakehouses Workplaces ... ..	16724	490	8
Homeworkers' Premises ... ..	3574	38	1
Total ... ..	20298	528	9

### 2.—DEFECTS FOUND.

Particulars	Number of Defects			No of Prosecutions
	Found	Remedied	Referred to H.M. Inspector	
<i>Nuisances under the Public Health Acts :—</i>				
Want of cleanliness ... ..	203	203	...	...
Want of ventilation ... ..	35	35	...	...
Overcrowding ... ..	4	4	...	...
Want of drainage of floors ... ..	3	3	...	...
Other nuisances ... ..	137	137	...	2
Sanitary accommodations—				
Insufficient ... ..	45	5	...	...
Unsuitable or defective... ..	115	11	...	...
Not separate for sexes ... ..	32	10	...	...
<i>Offences under the Factory and Workshop Act :—</i>				
Illegal occupation of underground bakehouse (S. 101) ... ..	...	...	...	...
Breach of special sanitary requirements for bakehouses (SS. 97 to 100) ...	131	131	...	2
Failure as regard lists of outworkers (S. 107) ... ..	...	...	...	21
Giving out work to be done in premises which are { unwholesome (S. 108)	...	...	...	...
infected (S. 110) ...	8	8	...	...
Allowing wearing apparel to be made in premises infected by Scarlet Fever or Smallpox (S. 109) ... ..	6	6	...	...
Other offences ... ..	788	788	...	4
Total ... ..	1507	1341	338	29

## 3.—OTHER MATTERS.

Class	Number	
Matters notified to H.M. Inspectors of Factories :—		
Failure to affix Abstract of the Factory and Workshop Act (S. 133) ... ..	338	
Action taken in matters referred by H.M. Inspectors as remediable under the Public Health Acts, but not under the Factory Act (S. 5)—		
Notified by H.M. Inspector ... ..	38	
Reports (of action taken) sent to H.M. Inspectors	157	
Other ... ..	119	
Underground Bakehouses (S. 101) :—		
In use during 1906 ... ..	57	
Certificates granted { in 1906 ... ..	1	
{ in 1907 ... ..	—	
In use at the end of 1907 ... ..	57	
Homework :—		
<i>Lists of Outworkers</i> (S. 107) :—		
Lists received ... ..	970	8442
Addresses of outworkers { forwarded to other Authorities	1035	
	received from other Authorities	
<i>Homework in unwholesome or infected premises</i> :—		
Notices prohibiting homework in unwholesome premises (S. 108) ... ..	...	...
Cases of infectious disease notified in homeworkers' premises	9	...
Orders prohibiting homework in infected premises (S. 110)	9	...
Workshops on the Register (S. 131) at the end of 1907 :—		
Workshops ... ..	4521	
Bakehouses ... ..	441	
Total number of Workshops on Register ... ..	4962	



BAKEHOUSES.

There has been no action taken during the year as regards cellar bakehouses, all these having been supplied with a certificate that they are satisfactory.

*The following table shows the amount of work done since the commencement of operations in 1894:—*

Year	Bakehouses Altered	Bakehouses Closed
1894 .....	3	3
1895 .....	16	12
1896 .....	28	19
1897 .....	22	31
1898 .....	18	17
1899 .....	12	18
1900 .....	8	13
1901 .....	3	17
1902 .....	0	19
1903 .....	2	16
1904 .....	73	106
1905 .....	39	61
1906 .....	1	11
1907 (Nil) all cellar Bakehouses now certified.	225	343
Total, 568.		

The alterations here mentioned have been in all cases considerable, and were, for the most part, carried out according to careful specifications drawn up in the City Surveyor's Department to comply with the requirements of the Medical Officer of Health.

The following new bakehouse was erected during the year 1907.

*Statement of the Bakehouse approved by the Improvement and Buildings Committee, and completed during the year 1907.*

Situation	Owner	Date of Completion
Rear of No. 581, Ashton New Road, Clayton	H. Gough ... ..	21st June, 1907.

HOUSING OF THE WORKING CLASSES, 1907.

The following table shows the new houses certified as fit for human habitation in a number of districts adjoining the City.

The only large district which shows an increase over 1906 is Salford, in which, however, we have to go back to 1894 to find another year with fewer houses certified. There is also an increase in Droylsden.

Gorton shows notable increase, not over 1906, but over other recent years.

## A.—NEW HOUSES CERTIFIED IN OUTSIDE DISTRICTS FROM 1891 TO 1907.

DISTRICTS	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Alford.....	...	254	564	454	613	883	872	1268	885	674	818	733	603	599	619	519	581
Accles .....	141	164	109	100	118	113	165	219	202	215	215	185	244	226	323	346	218
Cretford .....	30	43	38	274	356	313	355	340	262	265	320	329	379	483	365	376	341
Armston .....	73	45	42	34	80	102	135	88	43	18	21	24	35	106	90	50	35
Withington Urban District Council :																	
Withington, including Whalley Range	23	31	17	50	70	79	162	171	225	169	59	52	35	139	...	...	...
Didsbury .....	31	42	33	26	79	55	45	66	139	66	37	34	43	68	...	...	...
Burnage... ..	...	...	26	21	...	1	24	13	1	14	14	59	1	...	...	...	...
Chorlton-cum-Hardy	81	63	10	37	94	155	182	152	55	191	220	182	247	215	...	...	...
Moss Side .....	...	...	...	...	...	...	...	119	35	403	400	314	157	234	...	...	...
Hevenshulme .....	...	...	...	...	...	...	...	224	290	420	180	236	278	318	328	184	131
Roylsden .....	...	...	...	...	...	...	...	126	36	41	43	...	135	50	33	38	65
Moston .....	...	...	...	...	...	...	...	397	411	352	353	187	402	362	391	685	519
Totals.....	379	632	839	996	1410	1701	1940	3183	2584	2828	2680	2335	2559	2800	2149	2198	1890

It is otherwise with the City of Manchester. The number of new houses certified from November 1st, 1906, to October 31st, 1907, shows an increase over the number in 1905, and is the highest figure of any year, except 1898, 1899. In the latter years, of course, Withington and Moss Side were not included. If we exclude these, 1907 shows the largest figure since 1900. How far the prospect of more stringent bye-laws coming into force may be affecting the numbers it is impossible to say. The tendency would be towards an increase.

The districts in which the greatest expansion has taken place are Rusholme, in South Manchester, and Moston, in North Manchester.

The expansion in North Manchester, however, is not confined to Moston, but extends to Cheetham, Blackley, and Harpurhey.

In South Manchester there is no increase except in the district of Withington, in which the numbers are smaller than in 1906.

B.—STATEMENT AS TO THE NUMBER OF DWELLING-HOUSES CERTIFIED AS FIT FOR HUMAN HABITATION IN THE VARIOUS DIVISIONS OF THE CITY BETWEEN 1890 AND 1907.																		
DISTRICT	1st Nov., 1890, to 31st Oct., 1891	1891 to 1892	1892 to 1893	1893 to 1894	1894 to 1895	1895 to 1896	1896 to 1897	1897 to 1898	1898 to 1899	1899 to 1900	1900 to 1901	1901 to 1902	1902 to 1903	1903 to 1904	1904 to 1905	1905 to 1906	1906 to 1907	TOTALS
Ancoats .....	31	195	54	70	7	97	113	53	25	28	33	1	4	11	1	46†	13‡	782
Central .....	} NOTE:— 193 Artisans Dwellings	...	...	...	...	...	...	...	...	...	...	5	1	9	*95	...	...	303
St. George's .....		38	76	97	37	155	269	370	315	128	253	171	199	240	133	186	226	3001
Cheetham .....		7	18	24	44	39	37	41	18	102	53	56	82	85	57	50	60	790
Crumpsall .....		11	13	5	19	41	31	56	67	58	33	42	57	53	124	95	130	864
Blackley .....		60	60	170	191	342	253	346	327	169	129	70	92	14	7	30	149	2464
Harpurhey .....	55	12	74	89	148	193	225	263	248	282	179	78	109	156	222	327	481	3108
Moston .....	22	20	10	30	65	140	96	136	134	110	90	211	167	230	193	287	159	2118
Newton .....	40	39	49	21	65	67	198	91	103	198	47	239	29	40	7	5	0	1284
Bradford .....	36	8	15	8	...	97	118	128	98	119	175	94	...	15	...	...	4	881
Beswick .....	2	61	6	9	39	111	152	161	229	234	164	104	107	113	103	113	112	1824
Clayton .....	4	34	25	59	177	261	192	295	361	145	110	109	171	13	45	36	27	2064
Ardwick .....	177	169	65	15	60	69	71	152	119	182	80	190	145	155	91	84	108	1932
Openshaw .....	178	110	30	2	2	20	87	236	178	57	...	...	...	50	38	3	0	991
Gorton (West).....																		
Rusholme and Kirk..	51	37	76	89	211	277	294	354	486	462	288	346	258	453	261	345	474	5206
C.-on-M.....	26	97	97	88	18	36	46	57	1	32	48	27	12	15	5	2	1	608
Hulme.....	...	2	1	1	...	29	24	4	3	2	4	1	6	...	1	2	0	80
Moss Side .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	364	220	66	650
Withington .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	362	560	506	1428
City Totals .....	682	1093	669	777	1083	1974	2206	2743	2712	2308	1686	1744	1561	1652	2204	2500	2634	30378

\* NOTE.—Including 64 Dwelling-houses belonging to Sanitary Committee and 1 Lodging-house.  
† Including 1 Lodging-house and 44 Tenements  
‡ Including 2 Lodging-houses.  
§ Including 2 Lodging-houses.



In the Annual Report for 1906, an analysis was made of the death-rates in sanitary districts in successive quinquennia in relation to the conditions of housing, from which it appeared that the greatest improvement in the death-rate had occurred in the Manchester township. Great improvement was also manifest in the course of ten years in Cheetham, Crumpsall, Blackley, Harpurhey, and Newton; and in South Manchester in Ardwick, Openshaw, and West Gorton.

More moderate improvement is manifested in Hulme.

There is thus great improvement in the death-rate in those districts in which the operations of the Unhealthy Dwellings Committee have been most extensively carried on. There has also been marked improvement in the death-rate of other districts in which considerable extensions have taken place by the building of new houses for the same class of people as already inhabit the district, or for a class somewhat better off. This applies to Cheetham, Blackley, Harpurhey, Ardwick, and Openshaw. In West Gorton the improvement may be the result of conversion of the middens into water-closets, with increased attention to sanitary details. This applies also to Newton, in which district the Unhealthy Dwellings Committee have effected considerable improvement.

In Rusholme, on the other hand, where the new houses erected are for a class of people whose circumstances are, on the average, not so good as those of previous inhabitants, there is an increase in the death-rate.

In the same report was given a table (A) showing the numbers of tenements having different numbers of rooms, and the extent of overcrowding in each class of tenement, as measured by the Registrar General's definition that over two persons per room constitutes overcrowding.

On this basis Manchester appears to be much less overcrowded than London, Liverpool, or Glasgow, and to be less overcrowded in 1901 than in 1891, even in the smaller tenements which are situated in the older and more central portions of the City.

A table by Dr. Chalmers, Medical Officer of Health to the City of Glasgow, was given showing for one year the different death-rates of the populations housed respectively in one, two, and three-roomed tenements, and in tenements of four rooms and upwards.

An analysis is given also, for the Ancoats, Central, St. George's, and Hulme sanitary districts, of the density of room occupation, according as tenements consist of one, two, three, and four rooms, of the percentage of tenements in each class overcrowded at the Census 1901, and of the mean death-rates in the 36 months of which April 1st, 1901, is the centre, in each class of tenements in

each of these districts. We find in general the greater amount of overcrowding in tenements having the lesser number of rooms. The death-rate which is very excessive in one and two-roomed tenements does not follow the same order, being considerably greater in four-roomed than in three-roomed tenements. Suggestions in explanation of this circumstance are given in that report. They amount, in effect, to this, that the apparent degree of overcrowding in four-roomed tenements is much less than the real degree, owing to the manner in which four-roomed houses (or tenements) are occupied. Considerable attention should be paid to this matter, as it may be found possible to induce householders to utilise their accommodation so as to furnish better conditions of living.

The question is discussed how far the operations of the Sanitary Committee in connection with unhealthy dwellings are calculated to produce overcrowding in the districts affected by them.

It has been the steady policy of the Committee to distribute their attention as evenly as possible over the City, so that in condemning houses they may avoid, as far as possible, displacing a great number of persons in one district. Nevertheless, it might be expected that the number of houses condemned would be sufficient to intensify overcrowding in particular localities.

The statistical investigation given in the report for 1906 shows that between the years 1891 and 1901 this was not the case. Whether at any particular period, say from 1897 to 1899, when there was pressure on house accommodation, some effect of this nature was produced, is not determined by such an inquiry. It is to be observed, however, that the diminution of overcrowding noted in the year 1901 is coincident with a proportion of unoccupied houses smaller than was present in 1891.

It is to be particularly observed that this inquiry had reference only to the operations carried on by the Unhealthy Dwellings Sub-Committee between the years 1891 and 1901, carried on as they were in a particular manner, and at a particular rate.

It is manifest that if these operations had been conducted with a greater degree of concentration on particular districts, and on a more extensive scale, they might have had a different result as regards the production of overcrowding.

Nevertheless, the great network of trams which has been extended over the City in comparatively recent years must have an effect in relieving the pressure on particular areas, and may be partly accountable for the increased number of houses erected on the outer fringe of the City in the last year.

In considering what provision should be made for persons displaced in the more central parts of the City by the operations of the Unhealthy Dwellings (Housing) Sub-Committee, it appears to be necessary first to ascertain what



proportion of such persons work in the district, and would be injured in their means of livelihood by having to leave it. Such an inquiry was made in 1907 in one district in regard to those houses occupied only by members of one family, and it appeared to be shown that the number of such persons is considerable.

Another question which has to be considered is the extent to which houses are occupied by more than one family, such houses being sub-divided into those in which the tenant lives in the house and those (farmed houses) in which the tenant does not live in the house. In either case these houses are practically tenement dwellings, without the separate conveniences attaching to well ordered tenement dwellings. The conditions of life are necessarily such as to induce greater spread of disease, and to secure less privacy than if the same families occupied tenements, and no doubt if such families could be removed to tenement dwellings and induced to live there, a decided improvement would be effected. It is necessary to remember, however, that a number of such families take the sublet tenements furnished, a term which generally implies the minimum of equipment.

In order to ascertain the extent to which this sub-division of houses is carried, an investigation was made in 1907 into the circumstances of a particular district, in which such sub-division is known to be in excess of that holding elsewhere.

It was found that the occupied houses might be divided thus : houses occupied by one family, 805 ; by more than one family, tenant living in the house, 152 ; by more than one family, tenant not living in the house (usually called farmed houses), 53 ; common lodging-houses, 44 ; public-houses, 58. Thus, out of a total of 1,112 inhabited houses of all kinds, there were no fewer than 205 occupied by more than one family. These 205 houses contained 439 tenements of one room, 104 of two rooms, 63 of three rooms, 38 of four rooms, and 11 having more than four rooms. Total tenements, 655.

Very often, however, such sublet rooms are occupied by not more than one or two persons. This will be seen from these figures. The 805 private houses contained 3,726 persons ; the 655 tenements contained 1,824 persons.

An investigation was also carried out by the Sanitary Superintendent on an adjoining district, which is of an order not much superior to the above. As regards houses sublet to families, however, the circumstances are different. The total number of occupied houses was 1,966, the number occupied by more than one family, but having the tenant resident, was 249, the number of farmed houses was 28.

In the first district the percentage of houses occupied by members of more than one family is  $\frac{205}{1010} \times 100 = 20.3$ , in the second district it is 14.1, which is only somewhat less serious.



It will be manifest that, so far as the families now occupying sub-divided houses are concerned, it would be better, not worse, for them to live in tenements.

Further, if provision is to be made for displaced persons in the centre of the City, it will scarce be possible to build dwellings having the requisite number of rooms, and the necessary variation in number, otherwise than in tenements. Moreover, land being so valuable, there is but little prospect that a scheme of housing near the centre of the City will be sanctioned by the Council which does not provide for housing the greatest possible number on any site selected. This can only be done by means of tenements.

The question, then, arises whether it is desirable to make provision on the site for displaced persons? In answer to this question, I would express my opinion that, *as far as possible*, fresh provision, when requisite, should be made outside what may be called the business area in the centre of the City. Land is here very valuable, and can best be utilised for business premises and for public buildings. Habitations provided within or too near this area may, at no distant period, become merely obstructive. They are also liable to be overshadowed by large warehouses erected near them.

It is evident that if persons of the labouring class are to be displaced in any number it is necessary that any provision made for them should be within a reasonable distance of the houses removed, unless account can be taken in their fares or in their rent of the difference introduced into their circumstances. Clearly, if a labouring man, earning less than a pound a week, has to walk five or six miles a day, instead of one, the additional physical toil is a serious matter for him. If he elects to save himself the labour by taking a tram something is taken out of his wages.

It thus becomes matter of great importance to ascertain at what distance from their habitations in a given area persons in a poor area are employed. From the return obtained by the Sanitary Superintendent, it appears that of 7,068 adult persons living within a poor area, 765 work within the area, 1,362 within a distance of half-a-mile, and 1,357 beyond half-a-mile. Now, a considerable number of the 765 will be occupied in shops, and their living will be bound up, to a large extent, with the continuance of those shops. In the particular area in question, there is, at present, very little space available in the City within a mile for the erection of new dwellings. Indeed, this applies in more or less degree to the greater part of the insanitary areas within the City. It would seem to follow that, in the first place, provision of dwellings will be required within the area for a portion of those who will be displaced if the insanitary conditions prevailing here are adequately dealt with within a short period of years; secondly, that such provision should take the form of dwellings of various sizes; thirdly, that such provision need not extend to all the persons displaced.

The earnings of families are thus given :—Under 10s. per week, 97 ; under 15s., 167 ; under 20s., 311 ; over 20s. 1,292 ; over 25s., 797. We may assume that something like one-half of the working-class families may migrate to other parts of the City, providing there is room for them.

The persons on whom the condemnation of dwellings falls with greatest severity are those with the smallest incomes, since they have somehow contrived to make an adjustment to their existing circumstances. They have to create a new environment, and the process, under the most favourable circumstances, must be a hard one.

Assuming that the housing provision to be made for the poorest class is to have relation to their capacity to pay rent, it is clear that such provision can only be made in part at the expense of the community, and must, in a measure, be eleemosynary. Is this desirable ? In my opinion it is. It is far better for the poorest class of persons that they should be under government in Corporation dwellings, paying a regular rent, than that they should be free to live under what conditions of crowding and squalor they may choose, or be able to attain. In any case, assistance must be given.

What relation does the number of empty houses bear to this question ? In the first place, what is the number of empty houses ? In the poor area in question it is 4·5 per cent. This figure, however, without further particulars, does not much assist us. The question is, what is the proportion of empty houses of the poorer class ? Now, the houses unoccupied at a rent of 7s. or under over the whole City has been found, by direct enumeration from the Sanitary Department, to be 1·88 per cent. of all dwellings. The proportion of all tenements to tenements of four rooms and under was, at the Census,  $\frac{112854}{61563}$ . We may, however, take the proportion as being nearer  $\frac{112854}{70000}$  for the class of house to which the enumeration has referred. This gives us a percentage of houses unoccupied by the working class somewhere about three. If we allow one per cent. for the necessary movement, we have two per cent. available for the working classes throughout the City.

This is not a large percentage, yet it would, in general, suffice for those who can move from the district but for one consideration. There is still a very large number of houses unfit for habitation, although these are being gradually reduced in number. It may confidently be asserted that a high proportion of



the empty houses available for displaced persons at any one time are themselves insanitary. The available margin is, thus, not so large as it appears to be.

Moreover, it is desirable, in the interests of poor families, that some margin of empty houses should exist, so that when there is an access of good trade there need be no overcrowding. It is, however, not prosperity but adversity which produces cramped houses and overcrowding, since in prosperous times the tendency of working families is to secure a house of their own, while in bad times their tendency is to gather into sub-let houses. For these reasons, in considering whether houses should be erected for the working classes, it is not well to be satisfied with a small margin of empty houses.

On the other hand, there can be no doubt that when the income of a family is sufficient to enable it to move outwards to the outskirts of the City, this is, in general, an advantage, from the better health thus secured.

At the same time there is a certain proportion of the families which cannot be moved so far, and for these it is desirable that good dwellings should be provided by the Corporation at as low a rent as practicable. The facts regarding each family displaced by the normal operations of the Housing Sub-Committee could be ascertained when the house is being inspected, and a valuable body of facts would thus be gradually collected.

These general considerations apply only to the displacements produced by piecemeal condemnation of houses. If an area is to be cleared the disturbance is more considerable. If the area be a small one, it may be possible to redistribute the inhabitants. But, in any case, inquiries should be made into the circumstances as regards income, occupation, and place of occupation of each family to be displaced.

As we have seen, the operations of the Housing Sub-Committee, taken over 10 years, produced no condensing of the population. This is due, chiefly, to the improved circumstances of individual householders. If, however, as seems likely, the Sub-Committee in connection with the alterations from privies to water-closets find it necessary to carry on more extensive operations in opening out rows of houses, provision will be required in or near one or another district.



This will probably entail the clearance of limited areas, however desirous the Council may be to avoid such schemes.

At present the Sanitary Authority have possession of two areas which will enable them fairly to meet the requirements which may be rendered necessary by displacements within a certain distance of those areas. It may be said that private enterprise can best cope with the re-housing of the working classes. Apparently, however, private enterprise declines to cater for the re-housing of the poorest working classes, and this obligation is laid upon the community.

Now it does not follow, when provision has been made for families now occupying sublet rooms, or rooms in farmed houses, that such families will be induced to enter better habitations provided by the Sanitary Authority. In fact it may be confidently expected that they will not. All that can immediately be done, when such provision has been made, is to increase the stringency of the Nuisance Sub-Committee in dealing with overcrowding if this is needed. Clearly, however, if the Corporation do provide additional housing accommodation, the object of providing such accommodation will be rendered futile unless such stringency be exercised. The conditions also under which the houses and conveniences are used in common should be ascertained, and dealt with so far as the law will permit.

In the same manner stringency in dealing with overcrowding in private houses on well-defined lines is needful.

The same observation applies to the maintenance of cleanliness in and about dwellings, and one of the reasons for the provision of closets and of good drainage and yard surfaces is that the Sanitary Authority will be in a better position to insist on internal cleanliness.

Is it desirable to declare areas unfit for human habitation and clear them with a view to entire reconstruction? To the extent already mentioned it is or will be desirable. But so numerous and wide have been the detailed operations of the Sanitary Committee that it is difficult to find areas near the centre of the City which can thus be dealt with. Unfortunately, it must be added that there are portions of the City in which no smaller measure would give entirely satisfactory results, although by the present method of procedure very great improvement has been and can be effected.

As we have seen, moreover, there is reason to believe that the alterations already carried out in the centre of the City have had a beneficial result. Yet how much greater the effect of clearance of an area and entire re-construction may be is well seen in the dwellings in Chester Street, the second block in Oldham Road, and in the dwellings erected in Rochdale Road.

Whatever may be the course of action which the operations of the Housing Sub-Committee, carried on as they are likely to be in an active manner, may entail, there can be no doubt that the Housing Bill now before Parliament, should it retain substantially its present shape when it becomes law, will greatly facilitate the action of the Sanitary Authority. It is true the procedure under Part I. of the Housing Classes Act, 1890, is not rendered much less difficult, but the general result of the Act will be greatly to strengthen the hands of the Sanitary Authority. Much needed legislation will also be available under the house-planning section. No less necessary is the compulsory appointment of County Medical Officers of Health, an appointment needed for a variety of reasons.

This will certainly be one of the most useful sanitary measures passed in recent times, and one which deals with vital needs.

The following tables, furnished by the Sanitary Superintendent, show the number of houses closed, demolished, or added to other houses during the year 1907. The number is 296, and may seem to compare poorly with the year 1894, in which the number was 782. Yet the work done by the Housing Sub-Committee has been not less than it was in the year first named. It is to be remembered that the class of house now dealt with is different, attention having been given in recent years mostly to through houses, which do not lend themselves so easily to reconstruction as back-to-back houses.

Many of these do not require actually to be closed, added together, or demolished when a closing order is issued upon them, and the real magnitude of the work done is thus obscured.

It has lately become a part of the policy of the Sanitary Committee to insist on the removal of houses from rows placed close together in the rear, where such removal is requisite for the admission of light, or for the movement of air. These now constitute the houses demolished, and are necessarily much smaller in number than the number of back to back houses formerly removed. On the other hand the amount of displacement is not so great as it formerly was.



RETURN SHOWING THE NUMBER OF HOUSES CLOSED, DEMOLISHED, OR ADDED TO OTHER HOUSES, THEREBY BEING DISCONTINUED AS SEPARATE HABITATIONS, WITHIN THE CITY, FROM FEBRUARY, 1885, TO DECEMBER 31ST, 1907, ALSO FOR 1907.

SANITARY DISTRICT	Number of Houses Closed, Demolished, or Added together or to other Houses		Number of Houses Closed which have not up to the present time been allowed to be re-opened		Number of Houses Closed which have been subsequently demolished		Number of Houses Closed, and subsequently added together or to other Houses, thereby being discontinued as separate habitations		Number of Houses certified unfit for human habitation
	February, 1885, to Dec. 31st, 1907	1907	February, 1885, to Dec. 31st, 1907	1907	February, 1885, to Dec. 31st, 1907	1907	February, 1885, to Dec. 31st, 1907	1907	
Cal ..... { 1	379	2	101	...	157	...	121	2	11
..... { 2	797	35	171	25	481	6	145	4	146
..... { 3	749	5	129	5	296	...	324	...	32
tham ... { 4	31	3	11	...	16	2	4	1	50
..... { 5	4	...	1	...	1	...	2	...	51
George's... { 6	686	11	158	11	307	...	221	...	693
..... { 7	322	35	74	21	194	4	54	10	263
..... { 8	60	8	17	5	11	2	32	1	26
ats ..... 9	793	15	80	15	435	...	278	...	476
of Ancoats 10	561	...	28	...	330	...	203	...	...
ick ..... 10	...	...	...	...	...	...	...	...	...
ats ..... 11	457	...	15	...	245	..	197	...	...
ick ..... 12	350	40	55	26	150	8	145	6	242
of C-on-M. 13	30	...	6	...	8	...	16	...	} 63
of Ardwick 13	...	...	...	...	...	...	...	...	
-M. ... { 14	445	44	76	13	240	7	129	24	179
..... { 15	456	7	75	...	221	4	160	3	59
..... { 16	26	6	1	...	14	2	11	4	78
ne ..... { 17	338	54	70	32	184	15	84	7	141
..... { 18	637	...	105	...	350	...	182	...	16
psall ... 19	28	...	...	...	9	...	19	...	...
ley ..... 20	28	22	26	20	...	...	2	2	} 60
urhey ... 20	15	...	...	...	13	...	2	...	
on ... 21	...	...	...	...	...	...	...	...	10
on ..... { 22	187	...	16	...	83	...	88	...	21
..... { 23	45	...	13	...	14	...	18	...	12
ord ..... 24	67	...	24	...	26	...	17	...	...
on ..... 25	...	...	...	...	...	...	...	...	...
shaw ... 26	35	...	17	...	7	...	11	...	61
Gorton.. 27	16	...	2	...	8	...	6	...	14
olme ... 28	83	9	12	9	31	...	40	...	22
Side ... 29	...	...	...	...	...	...	...	...	...
Totals .....	7625	296	1283	182	3831	50	2511	64	2726



In the following table is seen the rate at which Insanitary Dwellings have been closed since 1885. This was greatest in the years 1894 and 1895. If it has since slackened, this is owing not to any lack of insanitary dwellings, but to fear of producing overcrowding, and to difficulties which have arisen :—

RETURN SHOWING THE NUMBER OF HOUSES CLOSED, DEMOLISHED, OR ADDED TO OTHER HOUSES, THEREBY BEING DISCONTINUED AS SEPARATE HABITATIONS, WITHIN THE CITY IN EACH YEAR FROM FEBRUARY, 1885, TO DECEMBER 31ST, 1907 (JANUARY TO DECEMBER IN EACH YEAR).

	1885 (From Febru- ary)	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Totals
Number of Houses Closed, Demolished, or Added to other Houses.....	56	103	117	191	282	165	287	564	509	782	707	507	284	296	641	266	58	346	305	378	290	195	296	7625
Number of Houses Closed which have not up to the present time been allowed to be re-opened .....	...	4	11	15	39	16	38	56	108	57	61	48	31	43	144	82	11	75	63	84	56	59	182	1283
Number of Houses Closed which have been subsequently demolished.....	46	69	55	113	170	70	120	279	195	511	415	297	185	154	307	104	37	119	130	167	164	74	50	3831
Number of Houses Closed and subsequently added together or to other Houses, thereby being discontinued as separate habitations.....	10	30	51	63	73	79	129	229	206	214	231	162	68	99	190	80	10	152	112	127	70	62	64	2511

The numbers, though thus reduced, are still larger in 1907 than they were in 1905 or 1906. But, as already mentioned, it may be anticipated that these alterations will be increased by the need for improving the dwellings at the same time that privies are converted to water-closets. It is true the provision of water-closets need be no absolute barrier to improvement in the general arrangement of the dwellings at some other time, but it is desirable that two alterations of magnitude should be made either at one time or with a considerable interval between them.

The extent of bad housing in the past places on the Sanitary Authority a great responsibility, in the present, to see that the new houses provided are substantial in construction, and free from fundamental defects as regards damp and arrangement.

As regards the construction of new buildings there is some danger that attention, in the matter of health, may be directed almost exclusively to dwellings, and that the same considerations may not be thought to apply to public offices or buildings of the warehouse class. It may well be doubted, however, whether the importance of abundance of light and the presence of good ventilation is not even more important in these than in private houses. Certainly the system is more exposed to attack by infection during the hours of work than during the hours of relaxation, while the quantity of impure matter inhaled is much greater. Also, as a matter of fact, there is reason to think that the workshop has an important influence on health. For these reasons light and movement of air should be secured for such buildings no less anxiously than for dwellings.

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## WORK OF THE LADIES' PUBLIC HEALTH SOCIETY AND THE LADIES' SOCIETY FOR VISITING THE JEWISH POOR.

The table on the following page shows what amount of work these Societies have done during the year 1907.

The work performed by the Societies for a number of years in teaching personal and household cleanliness in the poorer districts of the City has had a marked effect, and an improvement on former conditions can be discerned. The Medical Officer of Health desires to acknowledge the services rendered by the Lady Officers and District Lady Superintendents of the Societies in guiding and aiding the work of the Female Health Visitors.

From the table it will be seen that the Health Visitors have made 9,339 inspections of houses during the year in the course of systematic house-to-house visitation in their respective districts. They have also made 1,617 special enquiries in cases of death, and have laid 1,092 complaints as to insanitary conditions which they have detected in the course of their daily work.



A summary of the work done by the Health Visitors under the supervision of the Ladies Public Health Society and of the Medical Officer of Health is given in the following table:—

Work of Female Health Visitors, Year ending 31st December, 1907.

(a) LADIES' PUBLIC HEALTH SOCIETY.

DISTRICT	HOUSES VISITED		CONDITION OF HOUSES							SICKNESS			Disinfecting Powder left at Houses	LIMEWASHING							Reports as to Children (clothing, food, &c.)	Help Rendered  Help rendered includes :—Giving food, clothing, &c., advising mothers asto care and treatment of children, making of sick beds, cleaning houses for sick persons, obtaining recommends for Convalescents, &c.	Death Cards	Average Death-rate, 1900-1-2			
	First Visit	Not First	Dilapidated	Not Dilapidated	Clean	Dirty	Improved since last Visit	Not Improved	Overcrowded	No. of Houses containing Lodgers	Complaints requiring action by Sanitary Department	SICKNESS			Living and Bed Rooms	Kitchens	Yards	Closets	Cellars	Coal-places					Ceilings	Staircases	
												Infectious		Non-Infectious													Total Sickness
1. Ancoats, West .....	107	184	36	255	245	46	92	92	2	39	66	1	35	36	184	21	60	60	15	...	14	4	...	6	108	32.5	
2. Ancoats, North .....	...	654	35	619	586	68	4	610	...	81	43	5	74	79	31	27	54	55	5	...	34	2	...	6	138	29.1	
3. Ancoats, Central .....	383	17	76	324	309	91	...	17	3	57	36	1	17	18	...	9	15	13	2	...	4	1	...	...	28	32.7	
4. Ancoats, South .....	...	611	56	555	422	189	145	466	5	64	53	11	96	107	507	145	173	174	54	29	43	26	...	285	98	24.5	
5. Ancoats, East .....	...	628	58	570	495	133	160	468	...	127	80	23	75	98	627	30	65	63	4	8	25	8	...	187	71	24.3	
6. London Road .....	...	554	90	464	415	139	145	409	1	64	96	3	101	104	14	80	234	237	32	23	56	31	...	36	120	27.7	
7. Deansgate .....	...	327	6	321	214	113	89	238	3	125	31	2	44	46	...	71	90	93	27	3	19	40	...	8	92	34.6	
8. St. George's, North .....	...	137	1	136	129	8	63	74	2	7	14	1	8	9	...	5	1	1	...	...	...	4	...	34	124	...	
9. St. George's, East .....	...	459	123	336	399	60	126	333	...	53	40	3	23	26	...	10	67	64	15	1	...	...	...	13	152	...	
10. St. George's, Central .....	...	308	79	229	220	88	128	180	6	90	59	...	15	15	...	124	22	104	108	3	...	40	...	1	77	...	
11. Angel Meadow .....	...	230	31	199	191	39	99	131	...	111	41	5	7	12	...	12	35	32	...	...	...	...	...	22	27	46.6	
12. Chorlton-upon-Medlock, North .....	...	586	8	578	539	47	174	412	...	97	32	10	83	93	585	78	142	145	20	1	26	10	...	96	128	...	
13. Chorlton-upon-Medlock, South .....	15	568	57	526	560	23	30	538	...	88	105	5	47	52	...	42	180	159	40	3	18	2	...	2	106	...	
14. Hulme, West .....	84	353	103	334	392	45	9	344	1	39	79	4	33	37	...	19	45	258	253	71	1	27	9	183	106	...	
15. Hulme, Central .....	...	447	84	363	361	86	18	429	...	44	59	6	30	36	...	75	204	87	84	20	3	...	...	29	128	...	
16. Hulme, East .....	278	...	54	224	233	45	...	...	5	74	23	3	19	22	122	17	152	154	57	...	27	8	...	6	114	...	
TOTAL .....	867	6063	897	6033	5710	1220	1322	4741	29	1160	857	83	707	790	2072	794	1717	1695	365	72	318	185	44	914	1617	...	

(b) LADIES' SOCIETY FOR VISITING THE JEWISH POOR.

DISTRICT	First Visit	Not First	Dilapidated	Not Dilapidated	Clean	Dirty	Improved since last Visit	Not Improved	Overcrowded	No. of Houses containing Lodgers	Complaints requiring action by Sanitary Department	SICKNESS			Living and Bed Rooms	Kitchens	Yards	Closets	Cellars	Coal-places	Ceilings	Staircases	Help Rendered	Death Cards	Average Death-rate, 1900-1-2
												Infectious	Non-Infectious	Total Sickness											
17. Red Bank .....	...	1235	20	1215	1216	19	414	821	...	302	116	7	76	83	34	41	52	20	26	...	99	5	25	...	16.1
18. Strangeways .....	...	1174	12	1162	1159	15	958	216	...	619	119	24	142	166	...	...	1	1	...	...	...	...	1	...	...
TOTAL .....	...	2409	32	2377	2375	34	1372	1037	...	921	235	31	218	249	34	41	53	21	26	...	99	5	26	...	...
GRAND TOTAL .....	867	8472	929	8410	8085	1254	2694	5778	29	2081	1092	114	925	1039	828	817	1770	1716	391	72	417	190	940	1617	...



They have distributed no fewer than 7,519 leaflets on the following matters :—

1. The Prevention of Diarrhoea
2. The Prevention of Consumption.
3. Precautions against Measles.
4. Precautions against Whooping Cough.
5. Suggestions to Householders.
6. How Infants should be Fed, etc.

By the distribution of the leaflets and by personal instruction a system of educational work is constantly going on amongst the poor.

Disinfecting powder has been left at 4,097 houses.

The importance of cleanliness of the houses and person is steadily inculcated.

*Limewashing.*—The Visitors supply brushes on loan, and give the necessary sanitary dry lime to tenants of houses who will undertake cleansing. During the year they have been enabled to get 6,201 rooms, yards, closets, etc., thoroughly cleansed and limewashed. To this portion of their work the Medical Officer of Health attaches great importance.

In the course of their daily visits they came across 44 cases of neglected children. The parents were warned in many instances, and others were reported to the Society for the Prevention of Cruelty to Children.

Help was rendered to 940 families in many ways, such as in food and clothing, advising mothers as to the management of their children, making the beds of sick patients and cleaning their houses, obtaining recommends for Convalescent Homes, and in the summer months arranging to send children into the country for a holiday, and to the Manchester Camps at Birkdale and St. Annes for Poor Children at the Seaside.

During the year the Visitors have been engaged in another very important work, viz., supervising the disinfection of houses in cases of Consumption, and seeing to their subsequent cleansing. At the end of the year they had 473 cases of Consumption under observation in their respective districts. It is their duty to report monthly as to whether the house is clean and free from dust and dirt, and every three months they see that a thorough cleansing of the house takes place, so as to keep down infective material as much as possible, viz.: the walls are rubbed down with dough, the floors and furniture washed, and the bed clothing and personal clothing of the patient washed in boiling water.

Very great importance attaches to the work which the Health Visitors are doing in the instruction of mothers in the procedures which they must adopt when artificially feeding their children.

They have received special practical training in the methods and precautions required in the preparation of foods and in the feeding of infants ; and I hope that, in this way, the assistance given to mothers unable to suckle their children has been rendered more valuable.

I have pleasure in stating that Miss Eleanor Greg had undertaken on behalf of the Ladies' Public Health Society to supervise the work of the Health Visitors for the Medical Officer of Health. It is understood that she is to act under the instructions and be responsible to the Medical Officer of Health. Miss Greg holds the certificate of the Sanitary Institute.

The Sanitary Authority has now taken over the Health Visitors, who will however, continue to assist the Ladies' Public Health Society. Under Miss Greg's able supervision, the work has been systematised, and will be rendered steadily more satisfactory. It will, however, be essential that no opportunity should be lost in replacing existing Health Visitors, either on retirement, or on proved inefficiency, by trained Health Visitors. So far the results of this policy have been highly satisfactory. Acknowledgment is due to Mr. Dunks for the useful services which he has rendered in this work.

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## MONSALL HOSPITAL.

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### ANNUAL REPORT.

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#### GENERAL.

The total number of patients admitted and discharged during the year ending December 31st, 1907, is slightly smaller than in the preceding year, while the net mortality is somewhat lower, being 7·44 per cent. as against 8·17 per cent.

The number of patients admitted in a moribund condition, and dying, in fact, within 48 hours of admission, is larger in proportion, being 21 per cent. of the total deaths, instead of 15·89 per cent. Of the 34 moribund patients, 10, or 29 per cent., were suffering from obstruction of the larynx from Diphtheria, and their admission was, therefore, justifiable. No fewer than 20 per cent. of the 34 were found on admission not to be suffering from any notifiable disease.

As I have previously pointed out, the removal of a dying patient, while it is productive of nothing but unnecessary suffering to the patient, is damaging to the hospital, as the relatives are apt to assume that his death was due to



the methods employed on admission for his resuscitation, and their faith in the advantages to be obtained from the removal of subsequent cases in the same family who may not be so seriously ill is apt to be considerably shaken. These moribund cases should not be debited statistically to the Hospital.

The daily average number of staff employed is lower this year, while the average stay in Hospital of the patients is shorter. There was considerable pressure on the accommodation both for Diphtheria and Scarlet Fever, which was maintained for about three months. There was, however, no overcrowding of the wards.

As previously, much work has been done in the training of nurses, both theoretically by lectures and ward classes, and also practically. At Monsall, certificates are awarded only to those who have completed two years' service in the wards, and have satisfied the examiners in elementary anatomy and physiology, and in the principles of infection and the commoner infectious diseases. Only a few nurses are retained on the staff at the conclusion of this period, the majority proceeding to a general hospital for further training. Thus the staff nurses are composed exclusively of those who have been trained *ab initio* at Monsall, and no nurse is accepted for a shorter period than two years.

I am sorry to say, however, that nurses who have received only two years' training at Monsall have been employed by private nursing institutions as "fully trained nurses." It is much to be hoped that a stop could be put to what is certainly a fraud upon the public, but until the status of nurses is defined by some form of registration it is difficult to see how this can be brought about. At present there are a large number of these partially-trained nurses employed in private institutions, and I am sorry to say that many of them emanate from isolation hospitals. When a nurse is required in private practice, she is usually urgently needed, and there is no time for the physician or the relatives of the patient to call for her certificate before she is engaged. So far as isolation hospitals are concerned, much harm is done in that the reputation of the hospital is apt to suffer (and has, in my own experience, unjustifiably so suffered) from the misconduct or incompetence of the nurse, while the fact, which is sometimes well known, that nurses who have been dismissed from the hospital have been received without difficulty by a private nursing institution may be subversive of discipline in the hospital itself.

The health and discipline of the nursing staff have been excellent, and there can be no doubt that many patients have owed their lives to the patient and unremitting care of the sisters and nurses; this has been most evident in certain cases where surgical treatment was impossible and drugs were powerless.



For the post of probationer nurse 594 applications were received during 1907. Of these, 320 were not entertained, usually on account of the illiteracy of the writers. To the remaining 274 applicants forms were sent describing the duties of a nurse ; of these again, one-half only persisted in their candidature, and ultimately 45 were accepted for probationary training.

There were no cases of serious illness amongst the staff. Three nurses who were working in the Enteric Fever wards contracted that disease ; six nurses and one wardmaid suffered from Scarlet Fever, and two nurses were infected with Diphtheria. In no instance did these diseases leave any permanent disability after convalescence.

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### SCARLET FEVER.

The total number of cases of Scarlet Fever treated is slightly lower than last year, the mortality remaining unchanged. The greatly increased fatality of Scarlet Fever when it attacks children under three years of age is well marked. There were seven deaths within 48 hours of admission.

The patients were detained in Hospital somewhat longer than in 1906, the reason being that amongst cases discharged after four weeks' residence only in previous years there appeared to be some who were really not free from infection on leaving Hospital, as shown by a slightly higher proportion of return cases from those discharged within this period. I have thought it advisable, therefore, in 1907 to regard cases which were apparently free from infection at the end of four weeks with some suspicion, and to detain them a few days longer.

There has been one important change in the routine treatment of cases of Scarlet Fever. Previous to 1907 it was the routine practice to douche the nose and fauces in every case with sterilised water, but after January, 1907, this procedure was only adopted in the most severe cases, where there can be no doubt that it is urgently required ; the remainder have received no local treatment of the fauces, but the mouth has been kept clean by swabbing with various lotions or with plain water only.\*

This step was taken in order to ascertain more accurately whether the use of the nasal douche in mild and moderately severe cases had any bearing on the occurrence of otitis, rhinitis, and nephritis respectively. It has frequently been alleged that the nasal douche not only does not prevent, but tends to cause, otorrhœa in cases of Scarlet Fever. Out of so many as 1,500 cases, statistics on this point should, at all events, give an approximate idea of the truth or otherwise of this assertion.

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\*Douching with antiseptic solutions has been abandoned for some years.

The results have been that the incidence of otitis has not only not diminished, but has slightly increased from 19·7 to 20·4 per cent., whilst that of rhinitis has increased more than threefold. The number of those suffering from nephritis has risen also from 2·6 to 4·2 per cent. I can think of no factor other than the withholding of the nasal douche which would have any bearing on these results; certainly no change has occurred in the most important point, viz., the nursing of the cases. There can hardly have been any increase in the average severity of the cases admitted, or the mortality would have been higher than in 1906. I see, therefore, no reason to change the opinion expressed in previous Annual Reports, from 1903 onwards, that not only the fauces but also the nose of any patient suffering from Scarlet Fever should be douched daily whenever the proportion of nurses to patients is sufficiently high to make this possible.

As regards its bearing on the incidence of nephritis, I think it will not nowadays be doubted that this complication arises primarily from infection of the kidneys by scarlatinal toxins in the acute stage, and not from exposure to cold, for instance, during convalescence. Inasmuch as these toxins arise, in part at all events, from the necrotic processes at work in the fauces in the acute stage, the use of the douche to this part would seem to be indicated. Another factor in the determination of nephritis is the extra strain thrown on the kidney from the inability of the desquamating skin to do its fair share of excretion, but as no change has occurred in the methods or frequency of the bathing and anointing of all the cases which has obtained at Monsall for some years, this cannot now be taken into account.

In considering another vexed question, viz., the treatment of otorrhœa arising in the course of an attack of Scarlet Fever, it will be advisable to supplement the results obtained in 1907 by reference to those of previous years, and to consider the matter generally in the light of this combined experience.

In a certain number (about 20 per cent.) of patients at Monsall infection spreads from the posterior nares via the eustachian tubes to the ears, where an acute otitis media develops, which is practically always associated with suppuration in the tympanic cavity. It is almost certain that the pathological change consists in an inflammation of all the parts developed from the otic cleft, and not merely in a catarrhal change in the lining membrane of the tympanum. The parts affected are, therefore, the eustachian tube, the tympanum, the mastoid antrum, and the mastoid cells; where this tract is bony, the lesion is an osteitis. Taking all cases of scarlatinal otorrhœa, 84·5 per cent. are at Monsall curable by intratympanic methods; in the remainder, the otorrhœa persists. It is almost certain that this failure to react to intratympanic treatment is due to the presence of dead bone and its products on the mastoid side of the tympanum, associated in many cases with necrosis of



the ossicles or walls of the tympanum itself; the latter can be seen with the speculum; the former is not visible.

This being so, two courses are possible: to discharge the patient with the advice that an otologist shall be consulted or the child taken to an otological clinique, or to attempt to cure the condition before the child leaves the fever hospital, the former being the method most usually adopted in fever hospitals generally. There are to this, however, certain objections:—

(1) The advice is not always, or (as I believe) usually followed, and the otorrhœa remains uncured; such a patient is, in reality, living on the brink of a precipice. This, however, is not likely to be of so much importance as formerly, as such cases will probably now come under the notice of the medical inspectors of school children, but hitherto they have certainly not received treatment as a rule.

(2) A certain proportion of such cases are undoubtedly infective, and it is impossible in any given instance to say whether the patient is or is not free from infection when he leaves hospital. Infection from such cases discharged from Monsall has actually occurred in Manchester in the past.

(3) It is impossible in any given case to say that the patient is not in danger of his life from cerebral extension or pyæmia. When either of these has occurred, adequate surgical treatment is not always accessible, or even successful.

For these reasons I have always thought it advisable to cure the disease, whenever possible, before the patient leaves Hospital; indeed, I think it is a duty we owe to the parents of the children. This can be attained in many cases by removing the carious bone on which the continuance of the disease depends

In practice, this resolves itself into the performance of one of two operations: either the removal of all diseased bone on the mastoid side, leaving the tympanic region untouched—the mastoid wound giving exit to the discharge from that quarter—or the more radical operation, in which, in addition to this, the ossicles are taken away, all carious bone in the tympanum extracted, and the posterior bony wall of the meatus removed, one cavity being made from the mastoid and tympanic regions, which is subsequently drained through an enlarged auditory meatus. In the former case, healing takes place by obliteration of the mastoid process with granulation tissue; in the latter, the cavity remains, and is covered with epithelium, which spreads from the soft parts of the artificial meatus. The former operation—mastoidectomy—is chosen when the changes in the tympanum are slight; the latter—the radical mastoid operation—when they are extensive.

The results have been as follows:—

Mastoidectomy has been performed in 40 instances; in 20 the operation has failed to cure the otorrhœa, and the patient has been discharged with this



persisting (though doubtless with a diminished liability to cerebral extension) in 10 cases; in four a further radical operation was performed in Monsall. There have been no deaths, but in only 10 per cent. was the hearing improved by the operation. The radical operation has been resorted to in 118 cases; two have died from metastatic meningitis; in one, total deafness was present before operation, which was found to be due to extension into the internal ear, and, therefore, remained unrelieved. In every other instance there has been improvement of hearing and a cessation of the discharge, the average time subsequently taken for complete recovery being seven weeks. The objection frequently urged against the radical mastoid operation that it destroys the hearing, does not, therefore, hold good in these scarlatinal cases. This may be due to the fact that it is undertaken at a comparatively early stage, the average time being six weeks after the onset of the otitis. The time selected for the operation was when it seemed unlikely that any further intratympanic treatment would do good, the patient's general health being also sufficiently established to make it probable that his powers of resistance were adequate.

These figures do not include cases in which either operation was performed in the acute stage of the disease, for the treatment of obvious mastoid abscesses, or for conditions indicating serious septic absorption. For one or other of these reasons the mastoid antrum was opened 49 times. In this series the time for the operation could not be deliberately chosen, and the patients' resisting powers were usually at a low ebb.

During 1907 mastoidectomy was performed, for the cure of otorrhœa only, at the selected time in five instances, and for the relief of local symptoms in 21 cases. The radical mastoid operation was resorted to in 30 cases, with subsequent improvement of hearing in each instance; there were no deaths in either series.

As a rule, the operations revealed an extent of destruction of bone on the mastoid side which was much greater than had been expected. In scarlatinal otitis it is quite impossible to detect this by any method of intra-meatal examination, and the usual local signs of abscess are frequently wanting.

The incidence of post scarlatinal diphtheria is the lowest yet recorded in this Hospital, viz., one case only (or 0.06 per cent.). I am, as before, inclined to attribute this immunity to two factors: the use of rubber gloves by the nurses (and perhaps the absence of rubber syringes) in the cleansing of scarlatinal throats, and the large number of bacteriological examinations which have been made in the Hospital laboratory. I am not sure that I ought not to add a third factor—the absence of a receiving room and receiving nurses for the examination of patients on admission. I do not think it can be doubted that the constant presence of post scarlatinal diphtheria in an isolation hospital is evidence of want of efficiency on the part of the nursing staff.

## DIPHTHERIA.

The number of cases of Diphtheria admitted during 1907 was practically the same as in the preceding year, while the mortality was two per cent. lower. This fatality (17·2 per cent.) is far too high. It is accounted for by one cause only, namely, the large proportion of cases which have been admitted after the period during which the administration of antitoxic serum is beneficial. In only five per cent. of cases was this remedy given before admission, notwithstanding the fact that the serum is provided free of charge by the Sanitary Committee to any physician requiring it. In 1907, 73 per cent. of all cases and 81 per cent. of all fatal cases were admitted after the third day of disease, and had not been treated with antitoxic serum. Many of these deaths were, therefore, due rather to ignorance than to Diphtheria, seeing that the mortality of cases who receive the serum on the first day of disease is practically nil.

For the bulk of these unfortunate occurrences the certifying practitioner must be held blameless, as rather more than half (56 per cent.) of all the cases were sent in by him within 48 hours of his first visit; in these instances there is no reason why he should give antitoxin—the patient can receive it at Monsall. But it will be seen that 28 per cent. of all cases, and 43 per cent. of the fatal cases, were admitted after a period of more than three days had elapsed since his first visit; in only a small proportion of these (under two per cent.) had antitoxin been previously administered.

The tracheotomy death-rate is rather less, viz., 33 per cent., and of these 45 per cent. were accounted for by cases dying within 48 hours of admission. The operation of intubation of the larynx, being, in my opinion, suitable only for early cases of primary laryngeal infection, was, therefore, not performed in this series at all. Of the cases admitted to Monsall, about 85 per cent. were suffering from secondary implication of the larynx—again a preventible complication.

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## ENTERIC FEVER.

The case mortality for Enteric Fever is the lowest hitherto recorded at Monsall.

Whilst it is not possible to make deductions from statistics in respect to the clinical aspect of such a disease as Enteric Fever with any degree of accuracy, it is perhaps worth mentioning that this reduction in the mortality has coincided with an attempt to treat certain cases internally on antiseptic lines. The details of the method have been published elsewhere in extenso, but I here give a summary of the results and conclusions which it seemed possible to draw from them.



The drug selected was medical Izal oil, which was administered in somewhat large doses: as an emulsion in mucilage of tragacanth: the quantity of the pure oil taken by each patient in the 24 hours was 54 minims, and this dose was continued for periods varying from one week to 11 weeks. The average quantity of Izal oil taken by each patient was 3.1 ozs. I may say that after trial of numerous antiseptics this substance was selected for further experiment on account of its unusually high carbolic acid co-efficient for the bacillus typhosus, and because I had previously satisfied myself that it was not toxic. It is not, incidentally, identical with commercial Izal, and is not supplied except on the prescription of a physician.

Only severe and moderately severe cases were selected, and the urine of all patients taking Izal was examined bacteriologically by myself in the Hospital laboratory. The results are as follows:—

RESULTS.

*Clinical Record.*

Number of deaths in the non-Izal series .....	13 = 11.4%
Number of deaths in the Izal series .....	2 = 4.0%,
one of which died from perforation of the intestine.	
Number of cases in the non-Izal series in which Diarrhœa persisted after three days from the patient's admission to Hospital .....	47 = 41.2%
Number of cases in the Izal series in which Diarrhœa persisted after three days from the patient's admission to Hospital.....	7 = 14.0%
Total amount of urine passed daily by patients <i>before</i> taking Izal (excluding those with incontinence) .....	1,400 ozs.
Total amount of urine passed daily by patients <i>after</i> taking Izal (average of 10 days).....	3,800 „
Average daily quantity of urine per patient <i>before</i> Izal....	31 ozs.
Average daily quantity of urine per patient <i>after</i> Izal ....	86 „
Average day of disease on which Izal was commenced....	13th
Total number of consecutive cases .....	164
Total number taking Izal oil throughout .....	50
Izal oil not administered to .....	114

Of these 114—

- 64 occurred either before Izal treatment was commenced or during my own absence.
- 6 were obviously moribund on admission ;
- 3 could not take Izal on account of violent delirium or unconsciousness, and subsequently *died* ;
- 2 could not take Izal on account of violent delirium or unconsciousness, and subsequently *recovered* ;



- 2 were suffering from advanced Tuberculosis as well as Enteric Fever, and were discharged relieved ;
- 3 were not undoubtedly suffering from Enteric Fever on their admission, though they were subsequently found to be so ;
- 4 were unable to take Izal oil on account of nausea or vomiting ;
- 28 were thought to be suffering from the disease in too mild a form for useful comparison to be made ;
- 2 were treated by other drugs.

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114

### *Bacteriological Record.*

Number of cases examined bacteriologically throughout not taking Izal (A).....	81
Number of cases examined bacteriologically throughout taking Izal (B) .....	46
(50 cases were treated with Izal, in four of which specimens could not be obtained on account of incontinence of urine.)	
Total number of bacteriological examinations in class A .....	205
Total number of bacteriological examinations in class B .....	191
Of these in class A, B. Typhosus or B. Coli, or both, were present in 196 cases = 95%	
Of these in class B, B. Typhosus or B. Coli, or both, were present in 50 cases = 26%	
Number of cases in class B in which B. Typhosus or B. Coli were found on admission .....	38 = 76%
(In four cases (incontinent) examination could not be made ; in the remaining eight the urine remained sterile.)	
Of these 38 cases, the urine ceased to contain these bacilli in periods varying from three days to 14 days ; average, 7 days.	
In three of these the bacilli reappeared for periods ranging from one to five days, the urine being subsequently found to be sterile.	

### CONCLUSIONS.

Summing up the results of this and of previous work on the subject, it is evident that —

- (1) Medical Izal Oil is an efficient germicide in vitro for bacilli of the coli-typhoid group.
- (2) It can be given internally in the form of an emulsion in large doses, without any ill effects, and its administration can be continued for a prolonged period.
- (3) It does not disturb the appetite of the patients to whom it is administered ; after the first two or three doses the patients do not, as a rule, dislike it.
- (4) It does not increase peristalsis, and in practice tends to check diarrhoea when this is already present.
- (5) It acts as a diuretic and as a diaphoretic, and, therefore, increases the elimination of circulating toxins.

- (6) When bacilli of the coli-typhoid group are present in the urine, they usually disappear when Izal is given, and provided that the drug is administered for a sufficiently prolonged period the organisms do not reappear when the patient is apparently well.
- (7) This germicidal effect as regards the urine is not given by other antiseptics that are commonly used in Enteric Fever.
- (8) As far as these observations go, the case mortality is considerably diminished by the administration of Izal, and the disease is prone to run a more favourable course, especially in the acute stage.
- (9) These beneficial results have occurred notwithstanding the fact that the administration of the drug was not begun as a rule until the end of the second week of the attack, and in a series from which all mild cases were eliminated.

I would lay special stress on conclusions 3 and 4, inasmuch as at Monsall in previous years solid food has been administered wherever possible to patients in the acute stage of the disease, and that importance has always been attached to the fact that Diarrhœa is not (except in certain severe cases) a sign of Enteric Fever so much as the patient's inability to digest the food which he has previously been taking, this being generally milk only.

The reason why the administration of antiseptics internally has been hitherto justly regarded with disfavour is that they either disturb the appetite or increase intestinal peristalsis. Izal oil has not been given with the object of disinfecting the intestines; many antiseptics may diminish intestinal putrefaction, but this is not Enteric Fever, or even an essential part of it. In the light of recent research we must not, I think, concentrate our attention too closely on the site of the ulcers. The bacilli have been found in the circulating blood in the first week in 93 per cent. of all cases; in the second week in 76 per cent. Later on they may appear in the urine. At any stage of Enteric Fever the organisms are present in larger quantities at the duodenal end of the intestine than at the site of the ulcers; they appear, in fact, to be poured into the duodenum both from the intestinal blood vessels and in the bile. Any antiseptic employed must, therefore, be soluble in the contents of the bowel. So it is not difficult to understand why the administration of insoluble drugs, or of soluble drugs in insoluble capsules, has not been very successful.

It is to be regretted that so many cases continue to be sent to Monsall at so late a period of the disease, though the fact that only two deaths occurred within 48 hours of admission is gratifying. It will be noticed that in no less than 36 cases an interval of over 10 days elapsed between the first visit of the certifying practitioner and the admission to Monsall of the patient. In many instances this is due to refusal on the part of the patients to accept the advice of the doctor that they shall go to hospital. The feeling that the function of an isolation hospital is receptive only, and not curative, dies hard.

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## OTHER DISEASES.

There were 175 patients admitted to Monsall who, after careful and in some cases prolonged observation, were considered not to have suffered from the certified disease ; 24 of these died, seven within 48 hours of admission. The percentage of error was, in the case of Scarlet Fever, 6·7 per cent. ; of Diphtheria, 14·9 per cent. ; and of Enteric Fever, 8·0 per cent.

It will be seen in the table annexed that in the case of Scarlet Fever error has been more frequently made from confusion with slight indefinite illnesses than with other infectious diseases. In the case of Diphtheria, a correct diagnosis between that disease and other forms of tonsillitis was only possible in the majority of doubtful cases after repeated bacteriological examinations. In this connection it would be interesting (and much more valuable from the practical point of view) to know how often a patient really suffering from Diphtheria is thought to have simple tonsillitis only, because the result of one bacteriological examination is negative. Certainly no one in an isolation hospital would regard a negative result from a single bacteriological examination as of much value.

It is necessary to point out the fact that the original diagnosis is not confirmed does not imply (except in moribund cases) that the patient was improperly notified for removal to hospital. In many cases accurate diagnosis is impossible in the surroundings of the patient, and the bare possibility of his suffering from an infectious disease renders removal justifiable.

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## PUERPERAL FEVER.

In connection with this subject, I give, as before, a table showing the salient features of each case discharged during 1907 ; this is in practically the same form as that appended to last year's report.

In commenting on the cases I shall confine myself to the clinical features only, as any questions concerning the origin of the cases can be studied with greater advantage in the report of the Executive Officer to the Midwives' Supervising Committee, which deals with all cases, and not merely with those admitted to Hospital.

I would point out that these 49 cases are most useful when taken in conjunction, and not in comparison, with those of last year. In such a complex disease as Puerperal Sepsis it is impossible to draw any useful conclusion from statistics only, as it is not easy to eliminate obvious fallacies. The figures for last year are given in brackets.



# CASES OF PUERPERAL FEVER DISCHARGED DURING 1907.

BEFORE ADMISSION										AFTER ADMISSION					
No.	Initials	Day of onset of Fever	Day of disease on admission	Days elapsing between calling in of Doctor and Admission to Hospital	Doctor or Midwife	Forceps	Curetting	Serum	Bacteriology	Condition on Admission	Progress, Remarks, and Complications	Other Operations	Days in Hospital	Result	
1	E.M.	4	3	3	Dr.	No	Yes	No	Streptococci Blood Sterile	Very bad	Slow but complete recovery; general Peritonitis from ruptured uterine abscess	Laparotomy: plastic operation on uterine wall drainage	101	Cured	
2	M.R.	2	2	2	Dr.	Yes 7 times	No	Yes	Streptococci	Very bad	Extensive laceration; slow, but complete recovery; Pelvic cellulitis	None	53	Cured	
3	M.O.	2	2	2	Dr.	Yes	Yes	Yes	Streptococci, Bacillus Coli Communis	Apparently moribund	Complete recovery; extreme laceration of parts on admission, followed by Pelvic cellulitis	None	62	Cured	
4	M.F.	7	6	4	M.	No	Yes	No	Streptococci	Very bad	Died of Pyæmia 3 weeks later; Septic thrombosis	Ligature of left femoral vein	20	Died	
5	M.M.	2	2	2	M.	No	Yes	No	Streptococci	Fair	Uneventful recovery	Laparotomy	27	Cured	
6	E.B.	2	2	4	Dr.	No	Yes	No	Bacillus Coli Communis	Fair	Uneventful recovery	None	35	Cured	
7	J.O.	2	2	1	M.	No	Yes	No	No growth	Good	Rapid recovery	None	30	Cured	
8	E.T.	2	4	6	Dr.	No	Yes	No	Streptococci	Very bad	Uterine contents gangrenous; Puerperal mania (Patient transferred to Asylum)	None	15	Cured	
9	M.C.	4	3	6	Dr.	Yes	Yes	Yes	Streptococci, Bacillus Coli Communis	Very bad	Septic Endocarditis; Pelvic peritonitis; Abscess in uterine wall	Laparotomy	15	Died	
10	R.W.	4	5	8	Dr.	No	Yes	No	Streptococci	Fair	Uneventful recovery	None	38	Cured	
11	A.J.	4	3	3	M.	No	Yes	Yes	Streptococci	Apparently moribund	Curetted before admission with blunt curette; Early general peritonitis found post mortem	None (permission for Laparotomy refused)	3	Died	
12	S.L.	4	1	3	Dr.	Yes	Yes	No	Streptococci	Very bad	No improvement; intense parametritis	Laparotomy	8	Died	
13	M.B.	6	5	4	M.	No	Yes	No	Streptococci	Intense Sæpræmia	Rapid recovery	None	32	Cured	
14	M.L.	2	5	5	Dr.	Yes	Yes	No	Streptococci	Very bad	Extensive laceration of Vagina into peritoneal cavity, Pelvic peritonitis	None	41	Cured	
15	L.L.	7	11	5	M.	No	Yes	No	No growth	Fair	A case of "Sæpræmia." Developed puerperal mania	None	16	Cured	
16	B.K.	4	5	10	Dr.	No	Yes	No	Streptococci in blood and in uterus	Very bad	Slow and complete recovery	None	48	Cured	
17	S.D.	5	3	1	Neither	No	Yes	No	Streptococci, Blood Sterile	Bad	Rapid recovery; retained placenta	None	34	Cured	
18	F.C.	4	4	6	Dr.	No	Yes	No	Streptococci, Blood Sterile	Very bad	No improvement; uterus gangrenous	Hysterectomy	12	Died	
19	H.M.	9	1	9	Dr.	Yes	Yes	No	Streptococci	Bad	Retained placenta; rapid recovery	None	21	Cured	
20	M.H.	1	3	1	M.	No	Yes	No	No growth	Fair	Uneventful recovery	None	33	Cured	
21	M.D.	8	2	15	Dr. called same day	Neither	No	No	Streptococci	Moribund	A case of abortion induced by drugs; inquest held; Patient moribund from Pneumonia on admission	None	5	Died	
22	S.C.	3	12	15	Dr.	No	No	No	Streptococci	Very bad	Death from Double Pneumonia	None	11	Died	
23	L.N.	4	4	1	M.	No	Yes	No	Diplococci	Very bad	Convalescence retarded by bubo ovarian, abscess, and sinus, resulting from operation	Laparotomy	111	Cured	
24	M.C.	4	7	9	Dr.	No	Yes	No	Streptococci	Very bad	Dying from Pneumonia on admission	None	3	Died	
25	M.E.	4	5	9	Dr.	No	Yes	No	Streptococci	Bad	Intense Parametritis on admission	None	31	Cured	
26	E.A.	6	3	40	Dr.	Yes	No	No	No growth	Fair	A late case, admitted with femoral thrombosis	None	28	Cured	
27	M.W.	7	2	1	M.	No	Yes	Yes	No growth	Bad	Admitted in a maniacal condition	None	27	Cured	
28	M.S.	1	3	3	M.	No	Yes	No	No growth	Bad	Retained placenta	None	40	Cured	
29	A.R.	5	2	21	Neither	No	Yes	No	Streptococci	Very bad	Intense general septicæmia; local lesion slight	None	57	Cured	
30	M.C.	?	?	?	Dr. called same day	Neither	No	Yes	Streptococci	Apparently moribund	A case of missed abortion becoming septic; general Peritonitis on admission	Laparotomy	53	Cured	
31	R.S.	2	2	4	Dr.	Yes	Yes	No	Bacillus Coli Communis	Very bad	Extensive laceration; Pelvic peritonitis; repeated rigors; subsequent complete recovery	None	39	Cured	
32	H.W.	1	3	4	Dr.	No	Yes	No	Streptococci	Fair	Convalescence retarded by Pelvic cellulitis	None	60	Cured	
33	D.P.	1	2	3	Neither	No	Yes	No	Bacillus Coli Communis	Very bad	Masses of sloughing placenta removed	None	44	Cured	
34	R.H.	9	7	9	Dr.	No	Yes	No	Streptococci	Fair	Rapid recovery	None	27	Cured	
35	J.W.	1	4	3	Dr.	Yes	Yes	No	Bacillus Coli Communis	Very bad	Extensive laceration	None	42	Cured	
36	J.S.	3	5	7	Dr.	Yes	Yes	No	Blood Sterile	Bad	Extensive laceration; recovery rapid	None	33	Cured	
37	L.B.	2	3	3	Both	Yes	Yes	No	Streptococci Yeast	Bad	Retained placenta; recovery slow	None	42	Cured	
38	M.L.	2	7	7	Dr.	Yes	Yes	Yes	Streptococci	Very bad	Uterus gangrenous; extensive laceration	None	7	Died	
39	H.M.	1	13	13	Dr.	Yes	Yes	No	No growth	Very bad	Persistent Pyrexia; much Pelvic inflammation	Laparotomy	39	Cured	
40	A.B.	4	4	3	M.	No	Yes	No	Staphylococci and Streptococci	Bad	Rapid recovery after curetting	None	32	Cured	
41	E.S.	1	4	4	Dr.	No	Yes	No	Streptococci	Bad	Rapid recovery after curetting	None	34	Cured	
42	M.L.	2	3	2	Dr.	No	Yes	No	Bacillus Coli Communis	Very bad	Retention of almost entire placenta	None	30	Cured	
43	C.H.	4	6	5	M.	No	Yes	No	Streptococci and Staphylococci	Fair	Pelvic cellulitis present on admission	None	42	Cured	
44	E.B.	1	4	2	Dr.	No	Yes	No	Bacillus Coli Communis	Fair	Rapid recovery after curetting	None	23	Cured	
45	E.T.	17	2	7	Dr.	No	Yes	No	Diplococci	Very bad	Septic abortion followed by venous thrombosis	None	60	Cured	
46	M.H.	4	3	?	Dr. called in on the same day	M.	No	Yes	Streptococci, Bacillus Coli Communis	Moribund	General Peritonitis; permission for Laparotomy refused	None	2	Died	
47	M.D.	10	2	6	Dr.	No	Yes	No	Blood Sterile	Very bad	Death from general Septicæmia; no gross lesion	None	5	Died	
48	M.B.	3	3	2	M.	No	Yes	No	Streptococci	Moribund	General Peritonitis on admission	None	4	Died	
49	A.H.	4	3	1	M.	No	Yes	Yes	Streptococci	Very bad	Rapid recovery after curetting	None	47	Cured	
									Streptococci in blood						



(1) *Results*.—The total number of cases (49) is the same as last year. The gross mortality is also the same, viz., 12 cases, or 24·4 per cent.

As regards the condition of the patients on admission, six, or 12·2 per cent., appeared to be obviously dying, but two of these reacted in quite an unexpected manner to treatment, and ultimately recovered.

In 11, or 22 per cent., the state of health could be described as fair, but 34, or 69 per cent., patients were obviously very ill indeed. The statement previously made that at Monsall we do not, as a rule, see the mild cases therefore still holds good.

There is still far too great a tendency in the case of Puerperal Sepsis to regard the isolation hospital as merely a receptive institution, and as existing not so much for the convenience of the patient as of her environment.

The average interval elapsing between the calling in of the doctor by the midwife, or (in cases where he was in attendance at the confinement) from the onset of the first symptoms to the admission of the cases, was four and a half days ( $4\frac{1}{2}$ ). In this connection, case No. 26 is omitted, as a clinical, and not merely an arithmetical, average is required. This interval is, in my opinion, far too long. Whatever treatment may be considered advisable for cases of Puerperal Sepsis, there can be no doubt that the earlier it is applied the better ; but from the history of the cases it does not appear that any treatment worthy of the name was, as a rule, given before admission, the interval having been spent for the most part in the administration of vaginal douches and of small doses of quinine internally.

Of the cases discharged cured, the average duration of the stay in Hospital was 41 days (60). In every case the patient was detained until she was fit for domestic exertion. The average in the case of those who did not recover was eight days only.

(2) *The cause of the illness*.—The cases in which a medical man was present at the confinement number 28 (28), or 57 per cent. ; a midwife attended alone in 15 (16), or 30 per cent. ; five patients were not attended by either, and one by both. It is necessary, however, to observe that in the “doctors’” cases it is probable that a female attendant of some sort was also present, and it does not seem to me to be possible to entirely exclude her as a source of infection. As I pointed out last year, it is unlikely that the incubation period of Puerperal Sepsis in the large majority of cases is over 48 hours, so that when the time elapsing between delivery and the onset of the symptoms is greater than this, it is very doubtful whether the medical man can rightly consider himself or be considered responsible for the occurrence of sepsis.



In the "doctors' " cases this year this latent period was—

In 5 cases during the first 24 hours ;

In 8 „ between 24 and 48 hours ;

In 2 „ between 48 and 72 hours ;

In 8 „ between 72 and 96 hours ;

In 0 „ between 96 and 120 hours ;

In 5 „ over 5 days.

It is, therefore, very doubtful whether the medical attendant was really responsible for 15 out of the 28 cases, or nearly 50 per cent. of those for which he has probably been blamed.

In practice, the occasions on which the medical attendant finds it necessary to make an internal examination during this latent period must be very few, while the opportunities which an unskilled female attendant, over whom nobody whatever has or can have any possibility or power of supervision, may have of causing infection are very numerous.

The responsibility, however, of the medical attendant is rather more clear in cases where forceps were employed at the time of delivery, which this year were eight in number. This procedure was followed by extensive laceration of the cervix and vagina in six instances, in five of which the onset of the pyrexia occurred within 48 hours, and in one within 60 hours, of the instrumental interference ; in one instance the lacerations extended to, and had opened up, the general peritoneal cavity.

In the "midwives' " cases, the average day of onset of the symptoms was the fourth. Taking this with the results of the analyses of the "doctors' " cases given above, it is apparent that in the bulk of the cases admitted to Monsall—and we may take it that these are, as a rule, more severe than those left at home—infection was not determined by anything that had taken place at delivery. I believe this to be true of Puerperal Fever generally, and while I would not for one moment minimise the importance of asepsis during labour itself, I am certainly of opinion that insufficient attention is, as a rule, given by the medical profession and teachers of midwifery to the necessity for the preservation of this asepsis subsequently by the female attendant, whoever she may be.

(3) *The Bacteriology of the cases.*—Cultures taken with due precautions from the interior of the uterus showed the presence of streptococci only in 27 (29) instances, and combined with other organisms in five (5) more, making together 65 per cent. of all the cases. *Bacillus coli communis* was present also in five cases, and mixed with other organisms in four cases, equal to 18 per cent.

Streptococci were present in the circulating blood also in three instances, in all of which, incidentally, recovery took place. In seven (15) there was no growth on the culture media. Owing to the fact that intrauterine treatment had meanwhile been adopted, it was not possible to repeat the bacteriological examination in these cases. It is not, I think, possible to formulate any relation between the bacteriological findings and the clinical features of the cases; the numbers are too few.

(4) *The Nature of the Lesion.*—There were six (18) cases in which large portions of the placenta were found to have been retained in the uterus; all recovered. As previously mentioned, six (7) cases showed extensive laceration following the use of forceps, five of which recovered. General peritonitis was present on admission in five (8) cases, in two of which laparotomy was performed, with subsequent recovery. Permission for laparotomy was refused in two instances, and in one the patient did not appear to be in a condition to undergo any operation; all these died. There can, I think, be no doubt that the performance of laparotomy offers the only chance of recovery from general purulent peritonitis of puerperal origin.

Pelvic inflammation (cellulitis or peritonitis, or both) was present on admission in nine (3) cases, with seven recoveries, and developed during convalescence in two cases, both of which recovered. Intense general septicæmia without any discoverable gross lesion other than endometritis occurred in two cases (13); one recovered.

(5) *The treatment adopted.*—In all but four (8) cases the uterus was curetted on admission with a large sharp instrument, this procedure being followed by a thorough rubbing of the resulting raw surface with undiluted Izal fluid; the uterus and vagina were then packed with 10 per cent. Izal gauze. Neither intrauterine nor vaginal douching has been employed at Monsall for some 18 months. The mortality of the curetted cases was 22 per cent. I should add that for curetting it has not been my custom for the last 18 months to employ a general anæsthetic, but simply to abolish pain and sensibility by giving alcohol by mouth, followed by morphia hypodermically; this suggestion, which is undoubtedly a very valuable one, I owe to the courtesy of Professor Sir William Sinclair.

As previously mentioned, curetting was adopted at Monsall only after a fair trial of the policy of “non-interference.” Out of 79 cases treated only by general methods (including serum with or without intrauterine douches), 37 died, a mortality of 46 per cent. The curetted cases have, on the other hand, shown a mortality which has remained steady at or about 24 per cent. It does not therefore seem possible to accept the statement, which some would



have us believe, that the use of the curette is in itself to be condemned, unless that be taken to refer to curetting alone (*i.e.*, not followed by swabbing with a powerful germicide), which is undoubtedly most harmful.

I have removed the uterus (as a last resort only) in one case this year, but without success ; the condition of the organ was such that recovery seemed to be otherwise impossible. Laparotomy, with or without removal of the diseased appendages, was resorted to in seven (14) cases, with four (10) recoveries. It must here be remembered that this operation was performed during the pyrexial period and for the treatment of the lesion from which septic absorption was taking place, and on the indication that the operation was in each case clearly and urgently required. The results are, therefore, in nowise comparable with those of laparotomy for the late results of Puerperal Sepsis when the time for the operation could be deliberately chosen. In the pyrexial period the patient's resistance is usually at its lowest. I may, perhaps, add that these results have been fairly constant, for out of 40 cases in which I have been compelled to open the abdomen in the acute stage the recovery rate has been 60 per cent.

Antistreptococcic serum of the polyvalent variety has been given in seven (20) cases only, in six of which streptococci were present in the uterus. The dose was 100 cubic centimetres, and was usually given in a large quantity of saline solution hypodermically. With increasing experience of the value and limitations of local disinfection of the uterine, antistreptococcic serum has not been used as freely as heretofore, my impression being that it is only useful in cases where the local lesion is but slight while the septicæmia is intense. It seems to be pretty clear that doses under 100 c.c. are of comparatively little value, and also that the injection should not be repeated.

As regards general measures, I am certainly inclined to think that the administration of large quantities of normal saline solution (preferably by hypodermic injection) is of great value in the treatment of septicæmia generally, and of streptococcal infection in particular. Much fluid is also given by mouth. As close an approximation as possible to open-air treatment is obtained by having the ward windows kept very freely open, even when the outside temperature is low.

I would certainly prefer to treat these cases entirely on the open-air plan, but this is not possible at Monsall.

There can be no doubt that much of the success, where it has been obtained, is due to the perseverance and attention to detail on the part of the nursing staff. Intelligent and painstaking nursing is often more necessary in Puerperal than in Enteric Fever ; at times the pressure on the nursing staff has been very great.



It is greatly to be wished that some form of "after-care" of the patients could be obtained when they leave hospital. Most of our patients have then to choose between domestic labour and the breaking-up of the home, and one cannot detain them always as long as one would wish. What is wanted is to secure the services of someone who would do the rough work for them, if only for a fortnight after their discharge. A Convalescent Home is useless in cases of Puerperal Fever, as the mothers are already sufficiently anxious about the condition of their home and remaining children, and return to their domestic surroundings is often imperative. Though there have been marked exceptions, I cannot but feel that the attitude of the average husband in these cases is a markedly selfish one; too frequently has the absence of the housewife resulted in an outburst of various forms of intemperance on his part, with consequent neglect of the welfare of the children.

I would add that in the majority of cases the newly-born infant has been admitted with the mother, and that this course has always been urged on the relatives. Not only is the mother's anxiety allayed thereby, but the proper feeding of the baby has been made possible. When the mother is convalescent, she receives practical instruction in the feeding and clothing of the child, which is probably of value to any children she may have subsequently, and possibly also to those of her neighbours.

All patients who have suffered from Puerperal Fever are encouraged to report themselves at monthly intervals at the Hospital with their infants, and details of their progress after they have returned to domestic or other work have thus been obtained. Amongst other points, it is evident that the active disinfection of the uterus in the manner described has not interfered with subsequent pregnancy, and it is also manifest that the cure has usually been permanent, it having been quite an exception for the patient to become a regular visitor at another hospital on her discharge from Monsall. Only a very few cases have been lost sight of altogether.

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## MONSALL HOSPITAL LABORATORY.

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### REPORT FOR 1907.

During the year 5,050 specimens were examined by cultural methods for *Diphtheria bacilli*, which were found to be present in 213; in every case distinction was made between the true *Diphtheria bacillus* and other organisms resembling it morphologically. Every case of Puerperal Fever was also submitted to bacteriological examination, and the nature of the organisms present determined as far as cultural methods would permit; the details of this series are given in the section of this report which deals with Puerperal infection.

A large number of examinations were also made of the urine of patients suffering from Enteric Fever for the presence of *B. Typhosus* and allied organisms. The serum test was also performed as a routine on the admission of each patient.

Inasmuch as all the necessary media have been made on the premises, the working cost of the laboratory has been exceedingly small. For much valuable assistance in connection with the laboratory I am largely indebted to Drs. Arnold, Linton, Sharpe, and Smith (Assistant Medical Officers).

In addition to bacteriological work, sections have been prepared from the organs of the majority of the fatal cases, and also of all material from the operating theatre. A collection has thus been obtained which is of considerable value for reference, and also for educational purposes. A series of preparations, illustrating the anatomy of the temporal bone, has also been prepared

The laboratory itself is now exceptionally well equipped.

#### RETURN CASES.

During 1907, 86 cases have been notified to me by the Medical Officer of Health as having possibly originated from 80 patients previously discharged from Monsall Hospital. These possibly infectious cases form 5·3 per cent. of the total number discharged, as against 7·5 per cent. for 1906.

Inasmuch as comparison may be made between the figures for Manchester and those for other towns, it is necessary to point out that in this list are included all cases in which infection from a previously discharged patient is *possible*—not merely those in which, after examination, this factor is considered to be the prevailing one.

Moreover, there is no “time limit”; all cases are included, however long the interval elapsing between the discharge of the first case and the onset of the second may be. In many towns a time limit is arbitrarily imposed—usually one month. If those cases where the interval is greater than this be included, the Manchester figure is reduced to 4·5 per cent.

From the clinical point of view, the numbers concerned are much too small to enable one to draw any deductions with accuracy. Fortunately, however, the very carefully prepared statistics of the Metropolitan Asylums Board, embodied in a series of reports by officers appointed specially for this purpose, are available, and these cover a very large number of cases.

Taken altogether, the most logical conclusion seems to be that there is no statistical evidence to enable us to say on what clinical factor return cases depend. I give here tables showing the condition of the “originating” patients on discharge, and it will be seen that in the large majority there was nothing abnormal at that time.



Of these, the large majority again developed no abnormality subsequently, but in a few a discharge from either the nose or ears supervened, usually, in point of fact, a week after their return home. Taking the well-known tendency of scarlatinal otitis to affect the mastoid region, and that often without any discoverable local signs, it is not unreasonable to suppose that some of these patients may have been suffering from concealed suppuration in that part when they left Hospital. For this there is, of course, no remedy; neither have we any statistical evidence to enable us to fix an arbitrary period for detention of our patients apart from the clinical signs of each case.

The real reason for the occurrence of return cases is that Scarlet Fever being a disease of uncertain bacteriology no one can possibly pretend to say with accuracy when any given case is free from infection, though we may have various theories as to why patients become infected. The one which I am decidedly inclined to hold is that propounded originally by Dr. Niven, that there is in each hospital patient both an intrinsic infection—that due to his original ailment—and that which he obtains from other patients—the incubating chambers being probably the nose and naso pharynx. This is supported by the fact that by the separation of apparently convalescent from apparently acute cases the occurrence of return cases has been frequently considerably diminished. This has now been the practice at Monsall for several years.

But where we fail is that we cannot know when we have removed this extrinsic infective matter. The nasal cavities are tortuous; many accessory sinuses open into them, and even if we had a germicide which it was possible to apply to them, we could not pretend to reach their more remote parts. Moreover, the nose is extremely sensitive, and our experience at Monsall is shown conclusively that it is not possible to use chemical disinfectants in its interior. Irrigation with sterile water or saline solution is all that we can adopt.

I would submit that, considering the disabilities under which we labour from lack of present knowledge, not only of the bacteriology of Scarlet Fever, but also of the reaction of the tissues to the organisms, it is rather surprising that in only so small a percentage was infection from discharged cases considered possible.

Still less can we regard this percentage as constituting anything like a wholesale indictment of the system of treating cases of Scarlet Fever in isolation—or, if you will—segregation hospitals. It must not be forgotten that the remaining 94·7 per cent. of cases inflict no hardship on their environment after discharge, and also—a point to be considered in a commercial centre such as this—the removal of the patients to hospital has saved the parents from considerable financial loss in many instances. I omit altogether the advantage



which has been obtained from the provision of specially skilled nursing, which is not otherwise possible, and certainly could not be provided by the average private nursing institution.

One other point deserves mention. In many instances where a case is returned as having been possibly infected from one previously discharged from Monsall, a note has also been made on the form showing the existence of a number—sometimes considerable—of cases of Scarlet Fever in the same school. It must surely be almost impossible to distinguish between the two possible sources, and I entirely agree with the Manchester system of not holding an “inquest” on such cases, but of returning both sources as possible.

MONSALL HOSPITAL.

STATISTICAL REPORT FOR THE YEAR 1907.

Remaining in Hospital January 1st, 1907.....	345
Patients admitted during 1907 .....	2176
	<u>2521</u>

*Discharged.*

Cured and Died.....	2176
Remaining in Hospital December 31st, 1907 .....	345
	<u>2521</u>

Total number of Deaths during 1907 .....	162
Net Mortality .....	7.44%

Of the deaths, 34 occurred within 48 hours of admission = 20.99%

*Daily Averages.*

Patients.....	297.1
Officers, Nurses, and Servants .....	160.4
Average stay of Patients (in days) .....	38.2

TABLE SHOWING MONTHLY DISTRIBUTION OF DISEASES THROUGHOUT  
THE YEAR.

(B) *Discharges and Deaths.*

1907	Scarlatina	Diphtheria	Enteric Fever	Erysipelas	Puerperal Fever	Other Diseases	Total
January ...	156	25	26	6	4	13	230
February ...	104	16	20	2	8	12	162
March .....	161	24	4	5	3	12	209
April .....	112	20	10	0	4	11	157
May .....	126	19	6	4	5	9	169
June .....	112	14	10	0	0	11	147
July .....	137	18	6	3	3	9	176
August .....	98	10	10	0	9	10	137
September...	113	10	9	6	5	8	151
October .....	136	17	15	5	4	18	195
November...	129	18	13	9	1	37	207
December ...	164	24	18	2	3	25	236
Total .....	*1548	215	147	42	49	175	2176

\* Of these 1 suffered from Scarlatina and Enteric Fever co-existent. ; 1 from Scarlatina and Phthisis co-existent ; 1 from Scarlatina and Whooping Cough co-existent ; 1 from Scarlatina and Measles and Varicella co-existent ; 1 from Scarlatina and Leucocythemia co-existent ; 3 from Scarlatina and Measles co-existent ; 5 from Scarlatina and Diphtheria co-existent ; 5 from Scarlatina and Varicella co-existent.

TABLE SHOWING NUMBERS OF VARIOUS DISEASES TREATED.

DISEASE	Remaining in Hospital, Jan. 1st, 1907	Admitted during 1907	Dismissed, Cured, and Died during 1907	Remaining in Hospital, Dec. 31st, 1907
Scarlatina .....	245	1556	1548	253
Diphtheria .....	32	214	215	31
Enteric Fever.....	36	146	147	35
Erysipelas .....	7	39	42	4
Puerperal Fever .....	7	49	49	7
Other Diseases .....	18	172	175	15
Total.....	345	2176	2176	345

CASE MORTALITY.

MORTALITY PER CENT.

Year.	Scarlatina.	Enteric fever.	All diseases.
1903	4·7	19·2	8·5
1904	3·3	14·1	6·5
1905	3·6	15·1	8·4
1906	4·5	18·1	8·2
1907	4·5	10·2	7·4

SCARLATINA.

AGE OF PATIENTS	MALE			FEMALE			TOTAL		
	Cases	Died	Mor- tality percent.	Cases	Died	Mor- tality per cent	Cases	Died	Mor- tality percent.
Under one year ...	2	...	...	3	1	33·3	5	1	20·0
1 to 2 years ...	20	1	5·0	25	6	24·0	45	7	15·6
2 to 3 „ ...	42	4	9·5	40	5	12·5	82	9	10·9
3 to 4 „ ...	68	7	10·3	62	3	4·8	130	10	7·7
4 to 5 „ ...	60	6	10·0	88	9	10·2	148	15	10·1
5 to 10 „ ...	320	11	3·4	318	9	2·8	638	20	3·1
10 to 15 „ ...	155	1	0·6	183	3	1·6	338	4	1·2
15 to 20 „ ...	32	...	...	48	1	2·1	80	1	1·3
20 to 25 „ ...	14	1	7·1	23	...	...	37	1	2·7
25 to 30 „ ...	12	...	...	17	1	5·9	29	1	3·4
Over 30 „ ...	4	1	25·0	12	...	...	16	1	6·2
Total .....	729	32	4·4	819	38	4·6	1548	70	4·5

Of the deaths, four were complicated by other co-existent diseases; seven deaths occurred within 48 hours of admission.

PERCENTAGE COMPLICATIONS IN SCARLET FEVER, 1907.

Complication	Number	Percentage
Otorrhœa .....	316	20·4
Rhinorrhœa of Convalescence..	46	2·9
Nephritis .....	65	4·2
Albuminuria .....	80	5·2
Endocarditis .....	23	1·5
Adenitis of Convalescence .....	56	3·6



YEAR	No. of Scarletinal Discharges and Deaths	No. of Cases of Post Scarletinal Diphtheria	Case Percentage	Died
1901 .....	2669	104	3·9	3
1902 .....	2018	29	1·4	1
1903 .....	1877	8	0·4	2
1904 .....	1560	7	0·4	0
1905 .....	1499	13	0·9	0
1906 .....	1897	10	0·5	1
1907 .....	1548	1	0·1	0

DIPHThERIA.

AGE OF PATIENTS	MALE			FEMALE			TOTAL		
	Cases	Died	Mor-tality percent.	Cases	Died	Mor-tality percent.	Cases	Died	Mor-tality per cent.
Under 1 year ...	...	...	...	6	4	66·6	6	4	66·6
1 to 2 years ...	12	4	33·3	5	3	60·0	17	7	41·2
2 „ 3 „ ...	17	4	23·5	12	5	41·7	29	9	31·0
3 „ 4 „ ...	11	1	9·0	26	4	15·4	37	5	13·5
4 „ 5 „ ...	16	1	6·2	18	2	11·1	34	3	8·8
5 „ 10 „ ...	32	3	9·4	27	6	22·2	59	9	15·3
10 „ 15 „ ...	10	...	...	9	...	...	19	...	...
15 „ 20 „ ...	3	...	...	6	...	...	9	...	...
20 „ 25 „ ...	1	...	...	1	...	...	2	...	...
25 „ 30 „ ...	...	...	...	1	...	...	1	...	...
Over 30 „ ...	...	...	...	2	...	...	2	...	...
Total .....	102	13	12·7	113	24	21·2	215	37	17·2

15 deaths occurred within 48 hours of admission.

DIPHThERIA.

All patients with Diphtheria, and also all those suffering from Scarlet Fever, were examined for Diphtheria bacilli before being discharged from the Hospital.

DIPHThERIA.

TABLE SHOWING INTERVAL ELAPSING BETWEEN DATE WHEN PATIENT WAS FIRST SEEN BY A MEDICAL MAN AND THE DATE OF ADMISSION TO HOSPITAL, ALSO SHOWING DAY OF DISEASE ON ADMISSION.

DAYS	Interval between admission and date when first seen by Medical Attendant		Day of disease on admission	
	All Cases	Deaths.	All Cases	Deaths
Sent in on the same day	43	10	5	1
2nd day .....	84	8	23	4
3rd „ .....	26	3	30	2
4th „ .....	18	6	39	9
5th „ .....	17	4	35	5
6th „ .....	13	3	21	7
7th „ .....	8	3	27	3
8th „ .....	1	...	13	2
9th „ .....	3	...	7	2
10th „ .....	...	...	3	1
Over 10 days.....	2	...	12	1
Total .....	215	37	215	37

COMPLICATIONS IN DIPHThERIA.

Complication	Number of Cases	Percentage
Otorrhœa .....	2	0·9
Rhinorrhœa .....	2	0·9
All forms of Paralysis .....	28	13·0
Cardiac Paralysis alone .....	9	4·2
Palate alone .....	19	8·8
Diaphragm alone .....	1	0·5
Laryngeal alone .....	...	...
Hæmorrhagic Diphtheria .....	...	...
Adenitis of Convalescence .....	2	0·9

DIPHTHERIA.

TRACHEOTOMY CASES.

AGE OF PATIENTS	NO. OF PATIENTS	DIED	MORTALITY PER CENT.
Under 1 year .....	5	3	60·0
1 to 2 years .....	10	4	40·0
2 „ 3 „ .....	17	7	41·2
3 „ 4 „ .....	16	3	18·7
4 „ 5 „ .....	4	1	25·0
5 „ 10 „ .....	13	4	30·8
10 „ 15 „ .....	...	...	...
15 „ 20 „ .....	...	...	...
Total .....	65	22	33·8

Of these, 10 died within 48 hours of admission.

ENTERIC FEVER.

AGE OF PATIENTS	MALE			FEMALE			TOTAL		
	Cases	Died	Mor- tality percent.	Cases	Died	Mor- tality percent.	Cases	Died	Mor- tality percent.
Under one year ...	1	...	...	...	...	...	1	...	...
1 to 2 years ...	1	...	...	...	...	...	1	...	...
2 to 3 „ ...	2	...	...	...	...	...	2	...	...
3 to 4 „ ...	2	...	...	...	...	...	2	...	...
4 to 5 „ ...	1	1	100·0	...	...	...	1	1	100·0
5 to 10 „ ...	4	1	25·0	9	...	...	13	1	7·7
10 to 15 „ ..	13	1	7·7	12	...	...	25	1	4·0
15 to 20 „ ...	13	1	7·7	11	...	...	24	1	4·2
20 to 25 „ ...	18	1	5·6	4	1	25·0	22	2	9·1
25 to 30 „ ...	10	2	20·0	11	2	18·2	21	4	19·0
30 to 35 „ ...	14	1	7·1	8	1	12·5	22	2	9·1
35 to 40 „ ...	3	...	...	2	2	100·0	5	2	40·0
40 to 45 „ ...	2	...	...	2	...	...	4	...	...
45 to 50 „ ...	1	...	...	1	1	100·0	2	1	50·0
Over 50 „ ...	0	...	...	2	...	...	2	...	...
Total.....	85	8	9·4	62	7	11·3	147	15	10·2

Two deaths occurred within 48 hours of admission.



PERCENTAGE OF COMPLICATIONS IN ENTERIC FEVER.

Complication	No.	Percentage	Complication	No.	Percentage
Pneumonia .....	4	2·7	Intestinal Hæmorrhage }	4	2·7
Relapse .....	8	5·4	Perforation .....	3	2·0

TABLE SHOWING INTERVAL ELAPSING BETWEEN DATE WHEN PATIENT WAS FIRST SEEN BY A MEDICAL MAN AND THE DATE OF ADMISSION TO HOSPITAL, ALSO SHOWING DAY OF DISEASE ON ADMISSION.

DAYS	Interval between Admission and date when first seen by Medical Attendant		Day of Disease on Admission	
	All Cases	Deaths	All Cases	Deaths
Sent in on the same day	1	...	...	...
2nd Day .....	10	1	...	...
3rd „ .....	10	1	...	...
4th „ .....	11	...	2	...
5th „ .....	9	1	2	...
6th „ .....	17	1	9	1
7th „ .....	14	1	14	...
8th „ .....	18	...	15	...
9th „ .....	14	3	10	2
10th „ .....	7	2	12	...
Over 10 days .....	36	5	83	12
Total .....	147	15	147	15

OTHER DISEASES.

Certified as	Actual Disease	No.	Certified as	Actual Disease	No.
Scarlatina.....	No o b v i o u s		Enteric Fever..	Pneumonia ...	4
	disease .....	31	" ...	Influenza .....	3
" .....	Tonsillitis .....	28	" ...	Gastric Ulcer...	2
" .....	Erythema .....	10	" ...	Appendicitis ...	1
" .....	Measles .....	10	" ...	Febricula .....	1
" .....	Rötheln .....	4	" ...	Tonsillitis .....	1
" .....	Burns .....	3	" ...	Tuberculosis ...	1
" .....	Chicken Pox ...	2	Erysipelas ...	Dental Abscess.	2
" .....	Rheumatism ...	2	" ...	Eczema .....	2
" .....	Appendicitis ...	1	" ...	No o b v i o u s	
" .....	Bronchitis .....	1	" ...	Disease .....	2
" .....	B r o n c h o -		" ...	Abscess (fore-	
	Pneumonia ..	1	" ...	arm and hand)	1
" .....	Dermatitis .....	1	" ...	Abscess (mam-	
" .....	Ectopia Vesicae		" ...	mary) .....	1
	Pyelitis .....	1	" ...	Abscess (leg) ...	1
" .....	Empyema .....	1	" ...	I n f e c t i v e	
" .....	Enteritis .....	1	" ...	Periostitis ...	1
" .....	Febricula .....	1	P u e r p e r a l		
" .....	Herpes .....	1	Fever ...	Gonorrhœa ...	1
" .....	P e l v i c P e r i -		" ...	Pleurisy .....	1
	tonitis .....	1	" ...	Pneumonia ...	1
" .....	Pneumonia ...	1	" ...	Rhuematism ...	1
" .....	Septicæmia ...	1	Anthrax ...	G r a n u l a r	
" .....	T u b e r c u l a r		" ...	Kidney .....	1
	Kidney .....	1	" ...	Septic sore on	
" .....	Tuberculosis ...	1	" ...	heel .....	1
" .....	Urticuria .....	1	Measles .....	.....	4
Diphtheria ...	Tonsillitis .....	22	Sent in with		
" ...	Laryngitis .....	3	Mother ...	.....	3
" ...	Bronchitis .....	2	(Other than those		
" ...	Measles .....	2	sent in with Puer-		
" ...	B r o n c h o -		peral Fever cases)		
	Pneumonia ..	1			
" ...	L a r y n g e a l		Cerebro Spinal		
	Stenosis .....	1	Meningitis..	.....	1
" ...	Peritonsillar		Typhus ...	U l c e r a t i v e	
	Abscess .....	1		Endocarditis	1

Total of other Diseases, 175.

In the other diseases there were 24 deaths, seven of which occurred within 48 hours of admission. Total mortality of other diseases, 13·7 per cent.

PARTICULARS OF RETURN CASES OF SCARLET FEVER.

Number of alleged originating cases .....	80
Ditto return cases .....	86

TABLE A.

SHOWING DURATION OF STAY IN HOSPITAL OF ORIGINATING CASE.

Time	No. of Cases
Under 4 weeks .....	2
4 to 5 „ .....	9
5 to 6 „ .....	9
6 to 7 „ .....	17
7 to 8 „ .....	8
8 to 9 „ .....	17
9 to 10 „ .....	6
10 to 11 „ .....	5
11 to 12 „ .....	1
Over 12 „ .....	6
Total .....	80

TABLE B.

SHOWING CONDITION OF ORIGINATING CASE BOTH ON AND AFTER DISCHARGE.

*Condition on Discharge.*

Nothing abnormal .....	68
Otorrhœa .....	2
Rhinorrhœa .....	1
Peeling .....	9
	<hr/>
	80

*Condition after Discharge.*

Nothing abnormal .....	54
Otorrhœa .....	11
Rhinorrhœa .....	15
	<hr/>
	80



TABLE C.  
SHOWING INTERVAL ELAPSING BETWEEN DISCHARGE OF ORIGINAL CASE AND  
ONSET OF SECONDARY CASE.

Time	No. of Cases
Under 48 hours .....	0
2 to 3 days .....	0
3 to 4 „ .....	1
4 to 5 „ .....	1
5 to 6 „ .....	5
6 to 7 „ .....	7
7 to 14 „ .....	25
14 to 21 „ .....	19
21 to 28 „ .....	9
28 to 35 „ .....	7
Over 5 weeks .....	6
Total .....	80

## BAGULEY SANATORIUM FOR INFECTIOUS DISEASES.

### ANNUAL REPORT—YEAR 1907.

During the year ending December 31st, 1907, 558 patients were under treatment in this Hospital ; of these, 79 were remaining in hospital on January 1st, 1907, and 469 were admitted during the year. The following tables will show the distribution of these cases according to the disease from which each suffered and the district from which they came, and will give, in tabulated form, the result of the treatment that they received here. The report will follow the lines of my previous reports for the years 1904, 1905, and 1906, and it will thus

be possible to see to some extent whether or not the conclusions that have been drawn from results shown by the small number of patients treated in one year are borne out by the results obtained in the whole four years.

Before proceeding with the statistical portion of this report, I would like to mention a few of the matters connected with the up-keep and repair of the hospital that have received the attention of the Committee during the year.

The set of accumulators forming part of the electric plant originally laid down became worn out and useless. It became necessary either to replace them or to lay down a separate plant for the direct supply of electricity. After careful consideration the latter course was adopted, and a high-speed engine, coupled to a dynamo, was put in. The original dynamo was then adapted to the new switch-board, so that the hospital at present has a complete duplicate set of engines and electric plant capable of supplying light to an institution much bigger than this is as yet.

The agreement with the Bucklow Joint Hospital Board, referred to in last year's report, referring to the removal of patients and the removal and disinfection of clothing, bedding, etc., necessitated the purchase of more vehicles and another horse for the purpose, and the employment of an extra man as ambulance driver and disinfecter. A new building has, therefore, been erected containing an ambulance-house, a cart-shed, a carpenter's workshop, a mess-room, and two bedrooms for single men.

As it was also necessary that the ambulance drivers should be present in the hospital at night, two cottages have been erected, and will shortly be occupied by the two present drivers.

Two attic rooms in the Administration Block have been converted into rooms for nurses ; each is capable of holding two.

One of the temporary hospitals at Newall Green has been painted externally, and so protected against the action of the weather ; while the ordinary amount of external painting has taken place in this hospital.

The hospital has been kept busy during the whole of the year, the greatest number of patients in hospital on any one day being 95, and the average for the whole year rather more than 67.

Fatality Percentage.

The *percentage fatality* on all cases whose treatment was concluded during 1907 was 1.09. The corresponding figures for 1906 were 4.10 ; for 1905, 6.64 ; and for 1904, 4.48. It will therefore be seen that the figures for this year (1907) are particularly good.

The *percentage fatality* of cases of *Scarlet Fever* has always been low in this hospital during the last three years, being 3.2 per cent. for 1904, 3.88 per cent. for 1905, and 2.39 per cent. for 1906 ; but the figures for 1907, viz., 0.7 per cent., are quite abnormally low. It only remains to hope that continued efforts on the part of the staff will result in a similar excellent result at the end of 1908.

The *percentage fatality* of cases of *Diphtheria* during 1907 was 6.89. These figures are also, I think, good, especially when it is observed that only 29 cases of *Diphtheria* were treated during the year in this hospital.

The following tables give a general review of the cases treated during 1907 :—

LIST A.—All cases—Present in Hospital on January 1st, 1907, and admitted, discharged, or died during 1907.

DISTRICT	Cases in Hospital on Jan. 1st, 1907	Admitted during 1907	Discharged	Died	Cases in Hospital on Jan. 1st, 1908	Total Cases discharged or who have died	Fatality percentage
Withington .....	24	76	82	0	17	82	...
Manchester ..... (Including Moss Side)	18	240	216	2	40	218	0.91
Levenshulme ...	3	16	12	2	5	14	14.28
Bucklow .....	31	117	124	1	23	126	0.79
Other Districts... (Including Cheadle and Bowdon)	3	16	15	0	4	15	...
Private Cases ...	0	4	4	0	0	4	...
Totals .....	79	469	453	5	89	458	1.09

Fatality percentages—1904—4.48.  
                  ,,          ,,          1905—6.64.  
                  ,,          ,,          1906—4.10.  
                  ,,          ,,          1907—1.09.



LIST B.—All cases admitted during 1907—Divided according to their diagnosis and the districts from which they came.

DISTRICT	Scarlet Fever	Diphtheria	Cases sent in as one disease found on admission to be suffering from another	TOTALS
Withington.....	66	9	1	76
Levenshulme .....	7	9	0	16
Bucklow .....	112	3	2	117
Other Districts .....	12	3	1	16
Private Cases.....	2	2	0	4
Manchester .....	239	1	0	240
Totals.....	438	27	4	469

SCARLET FEVER.

During the year 438 cases of Scarlet Fever were admitted, which, with 71 similar cases remaining in hospital on January 1st, 1907, made a total of 509 cases of Scarlet Fever under treatment. This shows an increase of 103 cases over 1906, and helps to prove the increasing usefulness of this hospital to the City of Manchester.

LIST C.—Scarlet Fever only.

District	Cases in Hospital on Jan. 1st, 1907	Admitted during 1907	Discharged	Died	Cases in Hospital on Jan. 1st, 1908	Total Cases Discharged or who have Died	Fatality percentage
Withington ...	21	66	72	0	15	72	—
Manchester ... (Including Moss Side)	17	239	214	2	40	216	0·90
Levenshulme...	3	7	8	0	2	8	—
Bucklow .....	27	112	115	1	23	116	0·86
Other Districts. (Including Cheadle and Bowdon)	3	12	11	0	4	11	—
Private Cases...	0	2	1	0	1	1	—
Totals .....	71	438	421	3	85	424	0·70

Percentage fatality—1904—3·20.  
                          ,,     ,,     —1905—3·88.  
                          ,,     ,,     —1906—2·39.  
                          ,,     ,,     —1907—0·70.

Of the three cases that died, one, aged one year, had been ill one week before admission, and died within three hours of being admitted.

LIST D.—*Incidence of Scarlet Fever according to age and sex.*

District	Age 1 to 5		Age 5 to 10		Age 10 to 20		Age over 20		Totals		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total
Withington ...	7	10	18	12	8	5	3	3	36	30	66
Levenshulme..	0	0	4	1	1	1	0	0	5	2	7
Bucklow .....	18	17	25	17	8	16	5	6	56	56	112
Other Districts	0	1	5	3	2	1	0	0	7	5	12
Private Cases..	0	0	0	0	1	0	1	0	2	0	2
Manchester ...	26	31	50	62	20	32	4	14	100	139	239
Totals .....	51	59	102	95	40	55	13	23	206	232	438
Totals .....	110		197		95		36		438		

## COMPLICATIONS.

*Nephritis*.—Sixteen cases of Scarlet Fever developed Nephritis (*Hæmaturia*) during 1907—a percentage of 3·8. In only three of the cases was the throat found to be dirty on admission.

With regard to *Nephritis*, which is probably the most serious, as a rule, of all the complications of Scarlet Fever, my experience of the last four years has entirely confirmed my opinion expressed in the Annual Report of 1904, that (a) it is not the cases that have obviously dirty throats to commence with that are the most likely to develop serious complications later, and that, therefore, all cases of Scarlet Fever—however mild the throat symptoms may appear—should be carefully and systematically treated from the first, with a view to removing all the *toxines* from the body, and preventing their further absorption from the throat; and that (b) if such careful treatment is carried out, even such cases as may develop Nephritis will in all probability have only a mild attack of it, and will recover.

The *percentage incidence* of Nephritis in this hospital in 1904 was 2·21; in 1905 was 1·51; in 1906 was 2·32; and in 1907 was 3·8.

No fatality occurred amongst the 16 cases that developed Nephritis during 1907. Only one death from Nephritis occurred during each of the years 1904,

1905, and 1906. That is to say, that only three deaths from Nephritis have occurred in this hospital out of 1,127 cases—a *fatality percentage* of 0.26.

*Otorrhœa*.—Out of 422 cases of Scarlet Fever that passed through the hospital in 1907, 49 cases had either *single* or *double Otorrhœa*. Of these, 11 had such discharge when admitted; 38 developed ear discharge later. These cases stayed in hospital until all signs of ear discharge had disappeared for several days, excepting one case sent out, with the permission of the Medical Officer of Health of the district, to be nursed at home under special conditions.

In one case there was a history of the re-commencement of nasal discharge, but not of ear discharge, after the patient reached home, *and a return case resulted*.

The average length of stay in hospital, in days—

Of cases having <i>left Otorrhœa</i> was .....	63.05
„ „ <i>right Otorrhœa</i> was .....	57.35
„ „ <i>double Otorrhœa</i> was .....	59.75
Of all cases of <i>Scarlet Fever</i> was .....	55.50
„ „ having <i>Otorrhœa</i> was.....	60.25

In none of these cases was any serious operation required; in one only it was found necessary to scrape the outer surface of the mastoid process and remove a small portion of dead bone.

Reverting again to the question of whether ear discharge is induced in Scarlet Fever patients by (a) douching of the nose, or (b) douching of the throat, the following statistics may be of use :—

Out of 422 cases of Scarlet Fever, 125 had nasal discharge at some period of their stay, and therefore had the nose douched for a longer or shorter period. Of these, 24 subsequently developed either *single* or *double Otorrhœa*—i.e., 19.2 per cent.

Eleven cases had *Otorrhœa* on admission.

Fourteen cases had *Otorrhœa* subsequent to admission, without having previously had the nose douched.

All cases of Scarlet Fever are treated here with continuous douching of the throats; 38 cases out of a total of 422 had *Otorrhœa*, either *single* or *double*, subsequently—a percentage of 9.0 per cent.

*Adenitis*.—One good effect that can, I think, be attributed to the constant douching and careful cleaning of the mouth is that although 190 out of 422 cases of Scarlet Fever came in with enlarged glands in the neck, only 18 of the remaining cases developed enlargement of the glands in the neck after admission. Only one case occurred during the year of a gland going on to suppuration,



and this has been the average number of cases developing *suppurative adenitis* in this hospital during each of the last four years.

Percentage of cases having *cervical adenitis* on admission—45·13.

„ „ developing „ after admission— 4·29.

*Whooping Cough*.—Five of the cases of Scarlet Fever discharged during 1907 came in suffering also from *Whooping Cough*. No other child in the hospital caught Whooping Cough from these cases.

*Cross-Infection*.—There were no instances during 1907 of *Diphtheria* cases arising in Scarlet Fever wards, nor of *Scarlet Fever* arising in the *Diphtheria* ward.

Two children sent in as Scarlet Fever turned out not to be suffering from the disease at the time, but caught the disease while in hospital ; both recovered without complications.

One child had, in my opinion, a definite second attack while in hospital, having come in suffering from true Scarlet Fever.

*Fatal cases*.—One female, age 8 months, very ill and emaciated on admission, lived for three days.

One female, age one year, *in extremis* on admission, lived for 2½ hours ; had been ill for over a week before admission. This case has been included in this hospital's fatality percentage, but could fairly be omitted.

One female, age four years, came in on 9th day, with a bad sloughing throat and toxæmia.

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### RETURN CASES.

Ten cases of Scarlet Fever discharged from this hospital may be suspected of having caused the return to hospital of fresh cases. Of these, three cases may, I think, be exonerated from that suspicion :—

1. G. W.—In Baguley for 48 days. D. W. (sister) took Scarlet Fever 57 days later. Everything is noted as being normal in G. W.'s condition on leaving hospital ; she went home, and remained at home in the company of her sister ; no discharges of any sort were noticed in G. W. after her return home.

2. M. S.—In Baguley 55 days. Female, age 11. H. S. (male, age 15, errand-boy) began with Scarlet Fever 27 days later. Everything was noted as normal in M. S. when she left Baguley, and no discharges of any sort were noticed in her case later. There was another sister at home who had had Scarlet Fever, but did not come into Baguley ; intermittent nasal discharge was noticed for some time after the attack in her case,

3. H. S.—In Baguley October 5th to November 15th. Male, age 13. L. S., Scarlet Fever on December 1st. Male, age 6. Everything was noted as normal in the case of H. S. when he left Baguley; he had no discharges or sores of any kind at home later; he saw very little of L. S. H. S. slept in a room by himself after returning home, and L. S. slept with an elder brother, who, however, was never found to have Scarlet Fever.

It is to be noted that E. S. (sister, age 11) came into Baguley on November 6th—nine days before H. S. went home.

Of the other seven cases, one developed a very bad nasal discharge almost immediately after returning home, and three cases came from that house; two developed nasal discharge about a week after returning home, and in each case one playmate from an adjacent house caught Scarlet Fever, probably from those two cases. Three cases noted as normal on discharge, and having no complications on returning home, apparently each sent back one case of Scarlet Fever within about a fortnight; one case noted as normal on discharge, and having no complications on returning home, apparently gave rise to a case of Scarlet Fever 30 days later.

Possible originating cases causing return cases, 10; percentage of all discharged cases, 2.36.

Probable originating cases causing return cases, 7; percentage of all discharged cases, 1.65.

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## DIPHTHERIA.

Only 29 cases of Diphtheria were treated in this hospital during 1907; of these, two died—a percentage of 6.89. One of the fatal cases—a girl, age three years—was a severe Hæmorrhagic case, practically hopeless from the first; the other—a boy, age nine—came in with slight Nasal Voice, seemed to improve nicely for the first three weeks, and then began with various paralyses, and eventually died 38 days after admission.

Two other cases were of interest: one required tracheotomy immediately on admission, the other developed paralysis of nearly every portion of the body except the heart, the first symptom being a slight Nasal Voice, commencing after the child had been in hospital five weeks, and was running about the wards. Both cases recovered.

I would like to record that my experience has been that one of the symptoms that should sound the loudest warning in a case of Diphtheria is the commencement of *Nasal Voice*, however slight the paralysis may seem. In my cases it has almost invariably been associated with a very variable pulse, and in some instances is merely the precursor of a series of paralyses extending practically to every muscle of the body.

LIST E.—*Diphtheria.*

District	In Hospital, on January 1st, 1907	Admitted during 1907	Total	Discharged during 1907	Died during 1907	Remaining in Hospital on 1st January, 1908	Total	Percentage Fatality
Withington ...	3	9	12	10	0	2	12	—
Levenshulme ...	0	9	9	4	2	3	9	33·33
Bucklow .....	3	3	6	6	0	0	6	—
Other Districts (Including Cheadle and Bowdon)	0	3	3	3	0	0	3	—
Private .....	0	2	2	2	0	0	2	—
Manchester .....	1	1	2	2	0	0	2	—
Totals .....	7	27	34	27	2	5	34	6·89

LIST F.—*Diphtheria Admissions. Age incidence according to districts.*

District	Age 1 to 5		Age 5 to 10		Age 10 to 20		Age over 20		Totals		Total
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Withington .....	2	1	2	2	0	1	1	0	5	4	9
Levenshulme .....	0	2	3	3	0	1	0	0	3	6	9
Bucklow .....	0	0	2	0	0	1	0	0	2	1	3
Other Districts..... (Including Cheadle and Bowdon)	1	1	0	0	0	0	0	1	1	2	3
Private Cases .....	0	1	0	0	0	0	1	0	1	1	2
Manchester .....	0	0	0	0	0	0	1	0	1	0	1
Totals .....	3	5	7	5	0	3	3	1	13	14	27
Totals .....	8		12		3		4		27		...

STAY IN HOSPITAL.

The average duration of stay in hospital remains at about the same figure for 1907 as for previous years.

	AVERAGE STAY—IN DAYS			
	1904	1905	1906	1907
Cases of Scarlet Fever ..	58·5	59·74	57·23	55·50
Cases of Diphtheria ....	60·2	60·46	44·83	54·37
All cases .....	58·75	55·78	53·62	54·85





It is interesting to note that again, as in 1906, the various results obtained here have not varied very considerably according to the different class of district from which the patients came.

		Manchester, including Moss Side	Remaining Dis- tricts, including Withington, Levenshulme, Bucklow, Bowdon, Cheadle, etc.	TOTAL
Fatality Percentage—all cases	{ 1906 1907	4·34% 0·91%	3·92% 1·24%	4·1% 1·08%
Stay in Hospital in days-- Scarlet Fever .....	{ 1906 1907	57·06 54·59	57·40 56·44	57·23 55·50
Stay in Hospital in days—all cases .....	{ 1906 1907	53·83 54·46	53·53 55·20	53·62 54·85
Number of originating cases causing "Return" Cases..	{ 1906 1907	7 7	7 3	14 10
Percentage of above originat- ing cases on all cases dis- charged .....	{ 1906 1907	4·26% 3·27%	4·32% 1·44%	4·29% 2·37%

It will thus be seen that the results obtained here have been practically the same in the case of patients from either the more open residential parts (such as Withington), the rural districts (such as Bucklow district), or the more crowded parts (such as Manchester).

T. BASIL RHODES,  
*Medical Superintendent.*

REPORT BY MR. A. T. ROOK, SUPERINTENDENT OF THE  
SANITARY DEPARTMENT.

Sanitary Department,  
Town Hall, Manchester.

In presenting to the Medical Officer of Health the report of the work transacted in the Sanitary Department for the year ending 30th April, 1907, I beg to state that the City, for inspection and other purposes, is divided into 29 Districts, to each of which one Sanitary Inspector has been assigned.

In addition to these, there is a Superintendent, one Chief Inspector, two Drainage, five Smoke, one Canal Boats, one Lodging-house, three Adulteration of Food, one Milkshops, six Factory and Workshops Inspectors, including two Female Inspectors, and three Drain Examiners. There is also a staff of 32 Clerks for clerical and other work.

In the House Drainage Department there is also a Manager, ten Clerks, and eight Clerks of Works for supervising and measuring up work done by the contractors employed by the department in carrying out private drainage work.

The number of complaints of nuisances of various kinds made during the year was 5,002, viz. :—

1,458 through the Medical Officer of Health's Department.

1,623 by the Public.

38 through the Police.

1,883 by the Staff.

#### HOUSES LET IN LODGINGS.

Under the powers given by Section 90 of the Public Health Act, the bye-laws made thereunder have been enforced.

The number of houses on the register is 1,612. To these 4,741 day visits and 242 night visits have been paid. Eighty-three infringements of the regulations have been reported and dealt with.

#### DAIRIES, MILKSHOPS, AND COWSHEDS REGULATIONS.

Under this Order, which was made in July, 1879, and the Regulations thereunder in 1896, 3,015 milkshops and dairies and 66 cowkeepers are now on the register. The number of cows kept is 1,123. The number of visits to dairies, milkshops, and cowsheds was 5,800. Twenty-seven infringements of the regulations have been reported and dealt with.



## WORKSHOPS, BAKEHOUSES, SHOP HOURS, AND SEATS FOR SHOP ASSISTANTS ACTS.

During the year the Acts have been well observed, only a few persons having Shop Hours and Seats for Shop Assistants Acts been reported for infringements.

Much has been done to still further improve the condition of workshops, Workshop Acts especially those in which females are employed, and every care has been taken to see that in all cases separate and suitable sanitary accommodation for the sexes has been provided.

With regard to means of escape in case of fire, the whole of the factories Means of escape in case of fire. and workshops in the City have been inspected, and with very few exceptions are now considered safe.

Periodical changes will, of course, from time to time take place in various ways which will bring buildings within the meaning of the Act, and necessitate the constant supervision of the Inspectors and action on the part of the authorities.

The whole of the Cellar Bakehouses in the City (57) have been thoroughly Bakehouses. repaired and put in a satisfactory sanitary condition and certificates granted.

Many visits have been paid to houses in various parts of the City in which Out-workers. out-work is carried on, as will be seen on reference to the following tabulated statement, but constant visitation is necessary to maintain the standard of cleanliness which is to be desired, especially in houses in which shirt-making, handkerchief-hemming, brace-making, and umbrella-covering, etc., is done.

The people, as a rule, appear willing to carry out any suggestion made by the Inspectors to keep their houses clean; but at the same time it is almost impossible for small houses, sometimes containing large families, to be kept in such a satisfactory condition as workshops.

This Act, without the necessity of any legal proceedings, has been complied Seats for Shop Assistants Acts with by all the shopkeepers of the City.

The work done under the above Acts is shown in the following tables.

TABLE SHOWING THE WORK DONE BY THE INSPECTORS UNDER THE SHOP HOURS, SEATS FOR SHOP ASSISTANTS, AND FACTORY AND WORKSHOP ACTS.

INSPECTOR	SHOPS					SHOPS					WORKSHOPS						OUT- WORKERS		BAKEHOUSES							
	Shop Hours Act					Seats for Shop Assistants Act					Number of visits						Number of visits to houses where out-workers are employed		Factories and Workshops not provided with proper means of escape in case of fire							
	Number of visits	Number of Infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number of infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number in which Sanitary Defects were found	Number of Reports referred to H.M. Inspector (unregistered factories, &c.)	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits to houses where out-workers are employed	Number of houses found dirty.	Number of visits	Number in which Sanitary defects were found	Number of reports referred to H.M. Inspector of Factories	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register		
1	Richard Tolson...	11	...	...	705	...	...	...	...	253	3180	335	87	1	183	1080	1	...	2	481	46	...	...	3	4	85
2	Thcs. Partington.	2	...	...	1154	...	...	...	...	478	2813	265	35	1	108	1036	2	...	2	616	25	...	...	7	7	176
3	George Vernon...	4	...	...	541	...	...	...	...	180	2563	324	109	...	294	1138	15	3	3	516	70	8	...	3	3	127
4	Francis J. Rowe..	14	...	1	631	...	...	...	...	282	3239	336	115	2	237	1337	16	1	3	619	32	8	...	9	9	175
...	Emma Coppock..	2038	162	153	...	695	...	...	73	...	1559	89	1	9	...	...	1106	34	...	...	...	...	...	...	...	...
...	Mgt. Rigby .....	1032	194	148	...	182	...	...	23	...	1481	88	1	5	...	...	2428	49	...	...	...	...	...	...	...	...
...	TOTALS ...	3101	356	302	3031	877	...	...	96	1193	14835	1437	348	18	822	4591	3568	87	10	2232	173	16	3	23	563	...

TABLE SHOWING THE NUMBER AND CLASSIFICATION OF PERSONS EMPLOYED  
AS OUTWORKERS BY FIRMS WITHIN THE CITY, AND THE NUMBER OF  
SUCH FIRMS.

TRADES	No. of Employers	No. of Outworkers or Contractors employed
Tailors .. .. .	188	929
Shirt Makers .. .. .	58	1070
Dress, Mantle, Costume, &c., Makers .. ..	34	324
Underclothing and Pinafore Makers .. ..	69	743
Handkerchief Hemmers .. .. .	20	585
Boot, Slipper, &c., Makers .. .. .	45	180
Umbrella Trimmers .. .. .	18	236
Quilt, Cushion, &c., Makers .. .. .	3	23
Stay and Corset Makers .. .. .	2	3
Cabinet Makers, Upholsterers, &c. .. ..	10	19
Paper Bag Makers .. .. .	2	14
Rubber Workers .. .. .	3	4
Picture Framers .. .. .	1	4
Opticians .. .. .	1	2
Fur Workers .. .. .	1	1
Hair Pad and Frame Makers .. .. .	2	5
Cap Makers .. .. .	4	10
Belt and Trimming Makers .. .. .	4	117
Embroiderers .. .. .	3	39
Gold Beaters, &c. .. .. .	1	6
Knitting .. .. .	1	1
Totals .. .. .	470	*4315

\* 3786 of these are in the City, the remainder are in the districts of other Local Authorities  
to whom lists showing the names and addresses have been sent.



## PROSECUTIONS FOR OFFENCES, WITH RESULTS.

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed		Amount of Costs ordered to be Paid		Dismissed or Withdrawn
			£	s. d.	£	s. d.	
Robert McMurray ...	550, Stockport Road .....	SHOP HOURS ACT. Not exhibiting Abstract of Shop Hours Act in his shop	1	0 0	0	9 0	
	HAIRDRESSERS AND BARBERS	CLOSING ORDER, 1904.					
Joseph Rose.....	57, Great Ducie Street.....	Keeping his shop open after the closing hour fixed by the Order	0	1 0	0	2 6	
William H. Potts ....	51A, Great Ducie Street .....	Ditto	0	1 0	0	2 6	
Carl Backner .....	125, Great Ducie Street.....	Ditto	0	1 0	0	2 6	
Morris Bergon .....	39, Red Bank .....	Ditto	0	1 0	0	2 6	
Simon Seidman .....	79, Red Bank .....	Ditto	0	1 0	0	2 6	
Walter C. Atkinson ..	71, Spear Street .....	Ditto	0	1 0	0	2 6	
James Tonge .....	7, Albert Place, Bridge Street ..	Ditto	0	5 0	0	5 0	
William Griffiths ....	28, Gartside Street .....	Ditto	0	5 0	0	5 0	
John Hudson .....	6, Renshaw Street, Hulme .....	Ditto	0	2 6	0	2 6	
Robert Crotes .....	10, Lever Street, Hulme .....	Ditto	0	2 6	0	2 6	
John Towell .....	81, Whitworth Street West .....	Ditto	0	5 0	0	5 0	
James Brown.....	2, Lower Byrom Street .....	Ditto	0	2 6	0	2 6	
Charles Kent .....	13, Lamb Lane .....	Ditto	.....	.....	.....	.....	Withdrawn
James Anderson .....	10, Travis Street .....	Ditto	0	2 6	.....	.....	
Joseph Smith.....	18, Grey Street, West Gorton...	Ditto	0	2 6	0	2 6	
	Carried forward .....		2	13 6	2	9 0	

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed		Amount of Costs ordered to be Paid		Dismissed or Withdrawn
		Brought forward.....	£	s. d.	£	s. d.	
	HAIRDRESSERS AND BARBERS	CLOSING ORDER, 1904—continued.	2	13	2	9	0
Hyman Cohen .....	2A, Carnarvon Street, Cheetham.	Keeping his shop open after the closing hour fixed by the Order	0	2	0	2	6
Joseph Cohen .....	6, Herbert Street, Cheetham ...	Ditto	0	2	0	2	6
Morris Lewis .....	20, Brunswick Street, Cheetham.	Ditto	0	2	0	2	6
Thomas Hy. H. Adley.	2A, Miller Street .....	Ditto	0	1	0	2	6
Thomas Hy. Adley ...	10 Cannel Street .....	Ditto	0	1	0	2	6
Ditto ..	Ditto	Using abusive and offensive language to the Inspector	0	1	0	5	6
James McElroy .....	66, Oxford Street .....	Keeping his shop open after the closing hour fixed by the Order	0	1	0	2	6
Ditto .....	Ditto	Ditto	0	5	0	5	0
Ditto .....	Ditto	Ditto	0	5	0	5	0
Ditto .....	Ditto	Ditto	0	5	0	5	0
	FACTORY AND	WORKSHOP ACTS.					
Simon Rubenstein ...	Lockett Street, Cheetham .....	Having his bakehouse in a dirty condition	2	0	0	9	0
Isaac Silverman .....	124, Bury New Road .....	Ditto	2	0	0	9	0
John B. Midgley .....	83, Bridge Street .....	Neglecting to repair ceiling and walls of workshop, 85, Dantzic Street, after notice	.....	.....	.....	.....	Withdrawn (work done)
		Carried forward.....	8	0	0	5	2 6

PROSECUTIONS FOR OFFENCES, WITH RESULTS—*continued*.

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed		Amount of Costs ordered to be Paid		Dismissed or Withdrawn
George Prescott.....	FACTORY AND WORKSHOP 8, Fountain Street .....	Brought forward..... ACTS— <i>continued</i> .	£	s. d.	£	s. d.	
John Wainwright & Sons	27, Cannon Street .....	Neglecting to cleanse and limewash workshop after notice	0	10 0	0	9 0	
James Royle .....	18, Albert Square .....	Neglecting to plaster walls of workshop, 14A, Clarence Street, Cheetham, after notice		.....	0	3 6	Withdrawn (work done)
		Neglecting to repair roof of workshop and make dry floor of same at Britannia Street, Openshaw, after notice		.....			Ditto
Robert E. Macbeth ..	97, Wilmslow Road .....	Neglecting to cleanse workshop after notice		.....	0	3 6	Ditto
Timothy Marshall ...	7, Tipping Street, Ardwick .....	Ditto		.....	0	4 6	Ditto
Jacob Innerfield .....	23, Downing Street, Chorlton-upon-Medlock .....	Ditto	0	10 0	0	9 0	
Elizabeth Hall .....	71, Belle Vue Street, West Gorton	Neglecting to cleanse, etc., kitchen of her house after notice (outworker)		.....			Withdrawn (work done)
Clare Willis .....	35, Stanley Road .....	Not forwarding to the Local Authority a list of persons employed by them as outworkers or contractors		.....	0	12 0	Withdrawn
Thomas N. Hunter ..	3, Princess Road .....	Ditto		.....	0	3 6	Withdrawn
A. Bennett .....	278, Queen's Road .....	Ditto		.....			Dismissed
		Carried forward.....	9	0 0	7	7 6	



PROSECUTIONS FOR OFFENCES, WITH RESULTS—continued.

Name of Offender	Address of offender	Offence	Amount of Fine Imposed		Amount of Costs ordered to be Paid		Dismissed or Withdrawn
	FACTORY AND WORKSHOP	Brought forward.....	£	s. d.	£	s. d.	
Charles E. Benson ...	18, Corporation Street .....	Not forwarding to the Local Authority a list of persons employed by them as outworkers or contractors	9	0 0	0	3 6	Withdrawn
Arthur Lewy & Co....	57, Hilton Street.....	Ditto		.....	0	3 6	Ditto
John S. Moss & Sons..	23, Market Street .....	Ditto		.....	0	3 6	Ditto
Harry D. Mather ....	386, Ashton New Road .....	Ditto		.....	0	3 6	Ditto
Joseph S. Naphtali ...	350, Stretford Road .....	Ditto		.....	0	3 6	Ditto
J. S. Stanley .....	63, Piccadilly .....	Ditto		.....	0	3 6	Ditto
Abraham Wilks .....	420, Rochdale Road .....	Ditto		.....	0	3 6	Ditto
James Wilson .....	9, Corporation Street .....	Ditto		.....	0	3 6	Ditto
Thomas Redfern ....	103, Grosvenor Street .....	Ditto		.....	0	3 6	Ditto
Clarence A. Jones ...	14, Lever Street, Piccadilly .....	Ditto		.....	0	3 6	Ditto
William Bannister ...	10, Pexton Street, Rochdale Road	Ditto		.....	0	3 6	Ditto
Jones, Owen, and Richards	11, Newton Street, Piccadilly...	Ditto		.....	0	3 6	Ditto
John Marsland .....	392, Rochdale Road .....	Ditto		.....	0	6 0	Ditto
Louis Ray & Co.....	704, Stockport Road .....	Ditto	0	10 6	0	11 0	Withdrawn
John & Wm. Stovell..	93, Shudehill .....	Ditto		.....	0	3 6	Ditto
Margaret Smith .....	121, Red Bank .....	Ditto		.....	0	3 6	Ditto
Harriet Winterbottom	442, Oldham Road .....	Ditto		.....	0	3 6	Ditto
Total .....			£	9 10 6	10 17	0	

## SMOKE NUISANCES.

For the abatement of smoke nuisances, the four Inspectors appointed specially for this work have taken 1,311 timed observations of half-an-hour each, with the result that 79 notices for the abatement of nuisances have been served. Proceedings before the Magistrates have been ordered in 133 cases out of 174 offences reported. These cases were disposed of as follows:—

One hundred and thirty-five were summoned before the Justices, in 110 of which fines were imposed amounting to £280 13s. 0d., and costs £148 19s. 6d. One was ordered to pay costs only.

Seventeen orders of abatement were granted and served, 8 cases were excused, dismissed, or withdrawn. (In one case a fine was imposed in addition to an order of abatement being granted.)

Much attention during the past year, as will be seen by the above, has been given to the nuisance caused by the emission of black smoke, not only from the furnaces connected with boilers in mills, warehouses, and other works, but also from chemical and other industries, and the efforts made have already resulted in a considerable reduction of the nuisance.

Communications have also been made to adjoining Authorities in regard to smoke nuisances committed in their districts, and urging more stringent measures to bring about an abatement of the nuisance from which the Citizens of Manchester are the sufferers.

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## ADULTERATION AND MARGARINE ACTS.

*Table showing the number of Articles of Food and Drugs procured for Analysis, the number Adulterated, the number informally purchased or in which no proceedings were taken, and the number of cases in which Magisterial Proceedings were taken, together with the Decisions and the Total Amount of Fines imposed from May 1st, 1873, to April 30th, 1907.*

Article	No. Procured	No. Adulterated	No. informally purchased or in which no proceedings were taken	No. Summoned before Magistrates				Total Amount of Fines imposed		
				No. Summoned	No. Fined	No. of Warrants granted	No. ordered to pay Costs only—Dismissed or Withdrawn			
								£	s.	d.
Arrowroot .....	6	...	...	...	...	..	...	.....		
Bacon .....	2	...	...	...	...	...	...	.....		
Baking Powder.....	71	...	...	...	...	...	...	.....		
Beef Dripping .....	5	...	...	...	...	...	...	.....		
Beer .....	654	72	34	38	19	...	19	38	0	0
Bread .....	1269	39	7	32	32	...	...	119	10	0
Butter .....	3396	422	34	388	309	3	76	574	14	0
Buttermilk.....	2	2	2	...	...	...	...	.....		
Camphorated Oil .....	16	...	...	...	...	...	...	.....		
Castor Oil .....	1	...	...	...	...	...	...	.....		
Cheese .....	394	12	4	8	7	...	1	15	10	0
Chicory .....	43	...	...	...	...	...	...	.....		
Cider.....	3	...	...	...	...	...	...	.....		
Cocoa .....	108	...	...	..	...	...	...	.....		
Cod Liver Oil .....	6	...	...	...	...	...	...	.....		
Coffee .....	834	41	2	39	38	...	1	58	0	6
Confectionery .....	407	2	...	2	2	...	...	10	0	0
Cream .....	24	...	...	...	...	...	...	.....		
Drugs .....	613	13	12	1	1	...	...	0	5	0
Fish (tinned).....	7	...	...	...	...	...	...	.....		
Flour.....	312	...	...	...	...	...	...	.....		
Fruit (tinned) .....	2	...	...	...	...	...	...	.....		
Honey .....	6	...	...	...	...	...	...	.....		
Jams .....	395	1	...	1	1	...	...	1	0	0
Jelly .....	2	...	...	...	...	...	...	.....		
Ketchup .....	1	...	...	...	...	...	...	.....		
Lard .....	888	27	5	22	18	...	4	44	3	6
Margarine .....	245	2	..	2	1	...	1	0	5	0
Meats (tinned) .. .....	9	...	...	...	...	...	...	.....		
Milk .....	25193	1731	33	1698	1164	..	534	3276	15	0
Milk (skimmed) .....	161	27	...	27	22	...	5	45	11	6
Milk (condensed) .....	9	...	...	...	...	...	...	.....		
Mineral Waters, &c....	361	79	76	3	...	...	3	.....		
Carried forward ...	35445	2470	209	2261	1614	3	644	4183	14	6



Article	No. Procured	No. Adulterated	No. informally purchased or in which no proceedings were taken	No. Summoned before Magistrates				Total Amount of Fines imposed		
				No. Summoned	No. Fined	No. of Warrants granted	No. ordered to pay Costs only— Dismissed or Withdrawn			
Brought forward ....	35445	2470	209	2261	1614	3	644	£	s.	d.
Mustard.. .....	459	47	6	41	35	...	6	4183	14	6
Oatmeal.....	280	...	...	...	...	...	...	19	9	0
Olive Oil ....	12	1	...	1	1	...	...	.....		
Pearl Barley .....	10	...	...	...	...	...	...	0	2	6
Pepper .....	840	8	...	8	7	...	1	.....		
Pickles .....	4	...	...	...	...	...	...	12	12	6
Porter .....	8	...	...	...	...	...	...	.....		
Rice, Tapioca, &c.....	171	...	...	...	...	...	...	.....		
Shrimps .....	8	4	4	...	...	...	...	.....		
Spices .....	374	1	...	1	...	...	1	.....		
Spirits .....	1845	75	10	65	59	...	6	130	4	0
Sugar.....	65	...	...	...	...	...	...	.....		
Tea .....	529	10	7	3	2	...	1	2	0	0
Treacle & Golden Syrup	102	...	...	...	...	...	...	.....		
Tripe .....	11	...	...	...	...	...	...	.....		
Vegetables (tinned) ...	18	9	8	1	...	...	1	.....		
Vinegar.....	134	8	...	8	7	...	1	2	10	6
Wines .....	50	...	...	...	...	...	...	.....		
Totals.....	40365	2633	244	2389	1725	3	661	4350	13	0

Other Offences against the Acts.

Offence	No. Summoned	No. Fined	No. Dismissed or Withdrawn	Total amount of Fines imposed		
				£	s.	d.
Refusing to serve Inspector with Samples of Food .....	23	22	1	73	2	6
Giving False Warranty .....	24	6	18	46	0	0
Obstructing Inspector in the execution of his duty.....	4	2	2	10	0	0
Selling Milk from a vehicle which had not the name and address of the person inscribed thereon .....	7	6	1	1	5	6
Selling Skimmed Milk from a can unlabelled.....	2	...	2	.....		
Selling Margarine in an unstamped wrapper.....	10	3	7	0	6	0
Ditto Margarine Cheese .....	2	1	1	0	5	0
Totals.....	72	40	32	£130	19	0

Total amount of Penalties for Adulteration.....	£4,350	13	0
Total amount of Penalties for Other Offences.....	130	19	0
Grand Total.....	£4,481	12	0
Total amount of Penalties against Farmers .....	£2,080	13	6

## CANAL BOATS ACTS.

The number of canal boats on the register is 522.

The number of inspections made was 1,804, resulting in six infringements of the Act being discovered, which were referred to the Justices to be dealt with. In three of the cases fines were imposed amounting to 15s. od., with costs £1 9s. Three cases were excused.

Caution notices were sent to the owners and masters.

## OFFENSIVE TRADES.

The number of offensive trades on the register is 765. These have been placed under close supervision, and periodical visits paid.

## UNHEALTHY DWELLINGS.

During the year 1,449 houses were certified to be dealt with by the Sanitary Committee.

Of these, 1,283 were ordered to be closed.

In the majority of these the owners arranged to make alterations to meet the requirements of the Corporation.

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## PARTICULARS RELATING TO THE OPERATIONS OF THE CLEANSING DEPARTMENT.

Cleansing Department,  
Town Hall, Manchester,  
June, 1908.

Dear Sir,—There are within the City:\* pail-closets, 58,636; ash-boxes, 74,484; ash-bins, 20,255; midden-privies, 7,020; wet middens, 4,022; dry middens, 1,126; water-closets, 85,005; and cesspools, 12. The pail-closets are systematically emptied at regular intervals—once, twice, or thrice weekly, as necessity demands. The midden-privies are emptied as required. The contents of the pail-closets are taken to Holt Town and Water Street. At Holt Town the fæcal matter is dried into concentrated manure. The dry refuse is consumed in the Galloway boilers, and generates the steam required for working the machinery. The worthless fine ash, which cannot be consumed, is deposited at the nearest tip at Clayton Vale. The privy refuse and fæcal matter, which is taken to Water Street, is sent away in its crude state as nightsoil to Carrington and Chat Moss Estates and to farmers in Cheshire. Dry combustible matter is passed into the destructor furnaces or under the Galloway boilers at Water Street, and there destroyed. A large quantity of fine ash at Water Street is used as an absorbent for the fæcal matter from the pail-closets.

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\* Inclusive of the District of Moss Side.



The market garbage, of which we have 5,419 tons per annum, is carted to Water Street, and destroyed in the furnaces. Slaughter-house refuse is collected from the abattoirs and private slaughter-houses and sent to Holt Town, where it is passed through dryers, and the dry material is then added to the concentrated manure. Street sweepings are generally deposited at the nearest depot, and after being allowed to drain are carted to the nearest tip, or to the Water Street Depot, from whence they are sent away by boat to farmers or the Committee's Estates. The total quantity of material collected by this Department during the past year amounted to 336,511 tons.

We have within the City about 41 destructor furnaces of various kinds, and last year 11,934 tons of mortar was made from the clinker obtained from such furnaces

We employ about 51 "orderly" youths and men, who collect horse-droppings and litter from the streets, and deposit the same in the bins fixed in the footpaths. The contents of the bins are removed twice daily, and taken to the nearest depot.

Acting upon instructions received from you, special pails and lids are supplied for all cases of Enteric Fever; labels are attached to the pails asking the occupants of the house to use disinfectants, which are supplied with the pails; the pails are left in the yard, and not placed in the ashplace. The occupants are requested to use this special pail for the reception of the fæcal matter and washings from the patient only. The pails are removed in a specially-constructed vehicle, and taken to Holt Town Depot, where the contents are destroyed.

With regard to the cleansing of passages, we have a staff of about 54 men engaged specially upon this work. They regularly, at least once a week, cleanse the back passages in certain districts, and during last year 379,701 swillings and cleanings were effected in courts and passages.

During the year, 69,959 barrels of water were used in degging the streets, and 330,911 grids were unstopped.

During the past 17 years, we have deposited upon the various tips within the City the following quantities of material, viz.:—In 1892, 99,866 tons; 1893, 109,078 tons; 1894, 103,949 tons; 1895, 113,836 tons; 1896, 107,883 tons; 1897, 99,658 tons; 1898, 96,635 tons; 1899, 104,481 tons; 1900, 95,138 tons; 1901, 64,781 tons; 1902, 117,619 tons; 1903, 180,985 tons; 1904, 141,999 tons; 1905, 118,093 tons; 1906, 109,446 tons; 1907, 134,072 tons; and in 1908, 120,581 tons. The bulk of this material was deposited on the tips at Clayton and Harpurhey. It is composed principally of dry ashes, street sweepings, and bell-dust. Occasionally the contents of dry middens are sent there. During last year 17,106 tons of material was sent to Carrington Estate and 55,867 to Chat Moss Estate.

Yours faithfully,

Dr. Niven,  
Medical Officer of Health,  
Town Hall, Manchester.

R. WILLIAMSON,  
*Superintendent.*



## DEPARTMENT OF MEAT INSPECTION.

City Abattoir,

February 28th, 1908.

To Dr. Niven,

Medical Officer of Health,

Town Hall.

Sir,—I beg to submit the following report of unwholesome food seized under the Public Health Acts, 1875 and 1890, during the year ending December 31st, 1907:—

## ABATTOIR AND CARCASE MARKET.

Number of animals slaughtered in the Abattoir, Water Street, during the 12 months:—

Cattle	Sheep	Lambs	Calves	Pigs
35,304	132,757	44,533	2,117	13,193

Number of carcasses exposed for sale in the Dead Meat Market, Water Street:—

	Beasts	Sheep	Lambs	Calves	Pigs
Abattoir killed ..	32,056	126,030	42,661	1,600	1,261
Imported { Fresh ..	37,125	13,011	255	19,794	19,939
{ Chilled & Frozen	25,571	217,301	70,096	1,379	19,714
Total .. ..	<u>94,752</u>	<u>356,342</u>	<u>113,012</u>	<u>21,773</u>	<u>40,914</u>

Beast, Sheep, and Pig Offals:—

Imported and exposed in the Market	Fresh .. ..	691,600lbs.
	Chilled and Frozen	1,977,000 ..

## RUSHOLME ABATTOIR.

Number of animals slaughtered at the Abattoir, Monmouth Street, Rusholme:—

Beasts	Sheep and Lambs	Calves	Pigs
847	6,188	216	2,309

## MOSS SIDE ABATTOIR.

Number of animals slaughtered at the Abattoir, Denmark Road, Moss Side:—

Beasts	Sheep	Lambs	Calves	Pigs
255	1,192	848	6	1,949

## PRIVATE SLAUGHTER-HOUSES.

The amount of slaughtering executed in the private slaughter-houses is approximately estimated in the following figures:—

	Cattle	Sheep and Lambs	Calves	Pigs
Beef Butchers .. ..	9,048	23,036	208	—
Pork .. ..	—	—	—	18,356

## UN SOUND FOOD.

The amount of unwholesome food condemned during the year is summarised in the following table:—

*Meat and Fish.*

Beef .....	185,193 lbs.
Mutton .....	11,233 „
Veal .....	6,061 „
Pork .....	26,860 „
Venison .....	140 „
Imported Offals .....	11,670 „

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241,157 lbs.

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Fish .....	194,620 lbs.
Shellfish .....	53,131 „

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247,751 lbs.

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*Game and Rabbits.*

Ptarmigan .....	122 brace
Partridge .....	80½ „
Black Game .....	31½ „
Grouse .....	6 „
Capercaillies .....	3 „
Pheasants .....	1 „
Hares .....	51 head
Rabbits .....	5,526 „

*Poultry.*

Turkeys .....	880 head
Pigeons .....	134 „
Geese .....	61 „
Chickens .....	78 „
Ducks .....	47 „

*Fruit.*

Tomatoes .....	163 boxes
Oranges .....	155 „
Strawberries .....	81 baskets
Plums .....	65 bags
„ .....	9 baskets
„ .....	8 pots

*Fruit.—continued.*

Raspberries .....	48 chips
Apples .....	37 barrels
„ .....	16 hampers
„ .....	2 part barrels
Pears .....	27 bags
„ .....	10 barrels
Gooseberries .....	26 pots
„ .....	10 baskets
Cherries .....	7 sieves
Greengages .....	13 boxes
Black Currants .....	5 sieves
Apricots .....	4 half-sieves
Blackberries .....	2 baskets

*Vegetables.*

Potatoes .....	102 bags
Salads .....	72 baskets
„ .....	16½ cases
Sprouts .....	70 baskets
Radishes .....	66½ pots
„ .....	15 sieves
Watercress .....	44 flats
„ .....	24 half-flats
„ .....	1 box
Cabbage .....	38 crates
Parsley .....	27 pots
„ .....	1 half-pot
Cucumbers .....	20 cases
Mushrooms .....	26 baskets
„ .....	60 half-baskets
Onions .....	22 pots
„ .....	4 baskets
„ .....	9 doz. bunches
Cauliflowers .....	8 crates
Walnuts .....	17 bags
Chestnuts .....	10 bags

*Miscellaneous.*

Yeast .....	123 bags (20,152 lbs.)
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*Number of Seizures and reasons therefor.*

The number of carcasses, portions of carcasses, and consignments of fish, etc., condemned during the year have been 3,927, and from the following causes :—

Decomposing .....	1,704	Choked .....	16
Tuberculosis .....	884	Peritonitis .....	15
Fluke Disease .....	190	Mammitis.....	15
Hydatids .....	116	Unclean .....	9
Emaciation .....	108	Pleurisy .....	7
Abscesses .....	99	Pericarditis .....	6
Dropsy .....	89	Pyæmia .....	5
Asphyxiation .....	77	Icterus .....	5
Parasitic.....	83	Necrosis .....	5
Unmarketable .....	76	Anthrax .....	5
Fever .....	72	Unseasonable .....	4
Cirrhosis .....	67	Sarcoma .....	3
Congestion .....	47	Black Quarter .....	3
Inflammation .....	46	Bone Taint .....	3
Tumors.....	39	Gangrene .....	1
Injured .....	35	Melanosis .....	1
Degeneration .....	28	Nephritis .....	1
Pneumonia .....	27	Measles .....	1
Actinomycosis .....	18	Enteritis.....	1
Septicæmia .....	16		

The following table will show where the meat and fish were condemned, and the amount taken from each place :—

At the Abattoir and Carcase Market .....	212,944 lbs.	
(96,743 lbs. being dressed meat consigned from other places than the City, 11,670 lbs. of which was imported offals).		
„ Pig Market .....	11,923	„
„ Private Slaughter-houses .....	2,636	„
„ Rusholme Abattoir .....	1,569	„
„ Moss Side Abattoir .....	122	„
„ Shops .....	577	„
„ Cold Air Stores, Elm Street .....	3,091	„
„ „ „ Copperas Street .....	1,967	„
„ „ „ The Union .....	624	„
„ Triperies .....	274	„
„ Private House .....	3	„
„ Railway Stations .....	13,337	„
„ Fish Markets .....	239,841	„
		<u>488,908 lbs.</u>



The game, rabbits, poultry, vegetables, and miscellaneous were :—

*At Fish Market.*

Ptarmigan .....	122	brace
Black Game .....	31½	„
Partridge .....	26	„
Grouse .....	6	„
Capercaillies .....	3	„
Pheasants .....	1	„
Hares .....	51	head
Rabbits .....	5,417	„
Turkeys .....	117	„
Pigeons .....	134	„
Chickens .....	72	„
Geese .....	61	„
Ducks .....	47	„

*At Smithfield Market.*

Rabbits .....	85	head
Chickens .....	6	„
Tomatoes .....	163	boxes
Raspberries .....	48	chips
Strawberries .....	37	baskets
Gooseberries .....	26	pots
„ .....	10	baskets
Greengages .....	13	boxes
Pears .....	10	barrels
Cherries .....	7	sieves
Apples .....	2	barrels
„ .....	2	part barrels
„ .....	10	hampers
Plums .....	9	baskets
„ .....	8	pots
Black Currants ....	5	sieves
Apricots .....	4	half-sieves
Blackberries .....	2	baskets
Salads .....	72	„
„ .....	16½	cases

*Smithfield Market—continued.*

Sprouts .....	70	baskets
Radishes .....	66½	pots
„ .....	15	sieves
Potatoes .....	58	bags
Watercress .....	44	flats
„ .....	24	half-flats
„ .....	1	box
Mushrooms .....	26	baskets
„ .....	60	half-baskets
Parsley .....	27	pots
„ .....	1	half-pot
Onions .....	22	pots
„ .....	4	baskets
„ .....	9	doz. bunches
Cucumbers .....	20	cases
Walnuts .....	17	bags
Chestnuts .....	10	„

*At Railway Stations.*

Partridges .....	54½	brace
Turkeys .....	763	head
Oranges .....	155	boxes
Plums .....	65	bags
Strawberries .....	44	baskets
Apples .....	35	barrels
„ .....	6	hampers
Pears .....	27	bags
Potatoes .....	44	„
Cabbage .....	38	crates
Cauliflowers .....	8	„
Yeast .....	123	bags

*At Cold Air Stores.*

Rabbits .....	24	head
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*Particulars of Inspection.*

With the exception of 1,074 lbs. of beef and 159 lbs. of fish, the whole of the above amounts have been surrendered\* by the trade after being condemned by the Inspectors.

\* The term surrender includes cases in which the Inspector has discovered the diseased meat in the course of his duty.

In addition to the supervision of the abattoirs and other markets, there have been 2,233 visits made to the private slaughter-houses (55 being at the request of the butchers), and 12,783 carcasses examined in them. Of these, 54 carcasses and portions of 23 others were condemned as unfit for human food, comprising 50 pig carcasses, 2 beast and 2 sheep carcasses, and portions of 13 beasts, 9 pigs, and 1 sheep.

There have been 14,163 visits made to the meat, fish, fruit, and provision shops in the poorer districts of the City. Of these, 1,598 were made on Sunday mornings. Seventy-two shopkeepers have been cautioned for having small amounts of unsound food in their possession, seven being on Sunday mornings.

The triperies, sausage and pie factories have been regularly inspected, but nothing of an objectionable nature was discovered.

One hundred and sixty-one visits have been made to the railway stations with a view to ascertain what consignments of meat and fish are consigned direct to shops, and not coming to our markets for inspection. Six orders for destruction of unwholesome food have been obtained at the City Police Courts. Legal proceedings have been taken against two people for exposing unsound meat in the carcase market, and in each instance a fine was imposed ; in the aggregate the fines amounted to £15 and 30s. costs. Seventeen hundred and fifty-six official certificates have been granted (upon request) to the meat and fish salesmen of the markets for the purpose of being forwarded to their senders as a guarantee of what has been condemned.

A. D. MINOR, M.R.C.V.S.,  
*Chief Inspector.*

#### CONTAGIOUS DISEASES OF ANIMALS.

GLANDERS.—During the year there have been three outbreaks of glanders within the City. Four horses were found affected with the disease, and were slaughtered by order of the Local Authority. Their total value amounted to £131, and the owners were compensated in accordance.

ANTHRAX.—Six cases of anthrax have been discovered. Of these, three were dressed carcasses consigned to the carcase market, two were carcasses consigned to the Abattoir for the purpose of being “dressed,” and one was at the knacker-yard.

SWINE FEVER.—There have been no outbreaks of swine fever within the City during the past 12 months.

PARASITIC MANGE.—Nineteen outbreaks of parasitic mange have been dealt with under the Parasitic Mange Order of 1906. Proceedings were instituted under this Order against three persons for failing to notify the existence of disease, and in each instance a fine was imposed, the fines in the aggregate amounting to £5 and 22s. 6d. costs.

PIG MARKET.—The Pig Market (Water Street) is visited daily by an Inspector of the Local Authority under the Swine Fever Order, 1894, and various Orders of the Board of Agriculture are carefully enforced.

RAILWAY STATIONS.—Three hundred and eighty visits have been made to the railway sidings and cattle docks for the purposes of the Animals (Transit and General) Order of 1895.

HORSE MARKET.—At each monthly Horse Market a Veterinary Inspector is in attendance, as required by the Glanders and Farcy Order, 1894.

A. D. MINOR, M.R.C.V.S.,

*Chief Inspector.*

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## REPORT ON THE HEALTH OF THE WITHINGTON DISTRICT IN 1907,

BY T. CARNWATH, M.B., B.CH., DISTRICT MEDICAL OFFICER OF HEALTH;  
ASSISTANT TO THE MEDICAL OFFICER OF HEALTH, MANCHESTER.

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The total number of deaths among persons belonging to the Withington District during the year 1907 amounted to 417—205 males and 212 females

It is made up of the following figures :—

Deaths of residents within the district	..	..	..	..	347
„	„	„	in the Chorlton Union Workhouse		39
„	„	„	in localities outside the district	..	31
					<hr/>
					417
					<hr/>

The population of the district in June, 1907, being taken as 40,000, the death-rate is calculated to be 10·4. The corresponding rate for 1906 was 11·4.

The births during the year were 894, and the birth-rate was 22·3, compared with 19·5 in 1906. There were 481 males and 413 females.

The death-rates and birth-rates of the different townships for 1907 are respectively as follows :—

	Death-rate.	Birth-rate.
Withington (including Whalley Range) .. ..	11·6	21·3
Didsbury .. .. .	8·7	16·2
Chorlton-cum-Hardy .. .. .	9·5	26·9
Burnage .. .. .	14·5	35·2



Table of the ages at which the deaths occurred from 1897 to 1907.

AGES	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Under 1 year of age ... ..	63	82	66	75	82	72	77	79	64	86	82
Between 1 year and 5 years ... ..	27	37	29	31	32	38	25	28	25	39	25
Between 5 and 15 years ... ..	14	16	8	28	13	15	8	11	7	8	9
Between 15 and 25 years ... ..	14	18	11	15	13	17	12	12	14	16	17
Between 25 and 65 years ... ..	126	132	158	157	153	144	171	178	147	165	172
Over 65 years of age ... ..	91	102	91	102	120	126	117	131	125	134	112

The 82 deaths under one year are equivalent to an annual infantile death-rate of 91 per thousand births, compared with 113 per thousand in 1906.

INFANTILE MORTALITY.

Causes of death under one year in 1906 and 1907.

NAME OF DISEASE						1907	Correspond- ing figures for 1906
1. Pulmonary diseases	Pneumonia	..	..	..	..	2	—
	Broncho	..	..	..	..	7	—
	Bronchitis	..	..	..	..	5	13
	Laryngitis	..	..	..	..	1	—
2. Infectious diseases	Influenza	..	..	..	..	1	—
	Measles	..	..	..	..	—	1
	Whooping Cough	..	..	..	..	6	2
	Tuberculosis	..	..	..	..	2	3
	Chickenpox	..	..	..	..	2	—
3. Diet diseases	Diarrhœa	..	..	..	..	3	15
	Enteritis	..	..	..	..	1	4
	Wasting and Gastro-intestinal Catarrh	..	..	..	..	5	11
	Convulsions	..	..	..	..	9	10
4. Congenital diseases	Premature Birth	..	..	..	..	10	13
	Debility	..	..	..	..	14	—
	Congenital defects	..	..	..	..	7	4
	Heart Disease	..	..	..	..	1	1
5. Other causes	Suffocation in bed	..	..	..	..	—	1
	Injuries	..	..	..	..	—	1
	Not classified	..	..	..	..	6	7
						82	86

INFANTILE MORTALITY.

*Deaths under one year per thousand births. Different townships  
compared from 1897 to 1907.*

TOWNSHIP	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Withington .. ...	92	142	157	94	175	103	139	110	89	96	107
Didsbury ... ..	81	118	50	128	89	80	92	93	66	144	76
Chorlton-cum-Hardy ... ..	84	152	90	121	78	105	80	105	67	104	79
Burnage ... ..	165	132	102	114	255	95	89	104	164	145	109

*Deaths throughout the district in children under five years of age .  
from 1897 to 1907.*

NAME OF DISEASE	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Measles ... ..	11	2	1	6	1	15	6	1	6	4	2
Scarlet Fever ... ..	...	2	...	4	1	2	3	1	...	...	...
Whooping Cough ... ..	4	5	5	3	5	1	12	9	2	2	8
Diphtheria and Membranous Croup ...	...	4	2	3	3	3	1	1	3	3	...
Enteric Fever ... ..	...	...	...	...	...	...	...	...	...	...	...
Epidemic Influenza ... ..	2	3	1	1	1	2	...	2	3	...	1
Diarrhoea ... ..	8	12	19	7	22	3	7	7	7	17	3
Enteritis ... ..	...	...	...	...	3	...	3	4	2	4	2
Erysipelas ... ..	...	...	...	...	1	...	1	...	...	...	...
Tuberculosis ... ..	...	...	...	...	14	8	10	9	5	10	8
Bronchitis, Pneumonia, Pleurisy, etc.	14	19	9	13	11	22	9	21	13	21	19
All other causes ... ..	51	72	58	69	52	54	50	52	48	64	64
Total... ..	90	119	95	106	114	110	102	107	89	125	107

*Deaths of all persons belonging to the district in 1907 and previous six years.*

NAME OF DISEASE	1901	1902	1903	1904	1905	1906	1907
Smallpox ... ..	...	...	...	...	...	...	...
Measles ... ..	1	17	6	1	7	4	2
Scarlet Fever ... ..	1	7	3	3	1	...	...
Whooping Cough ... ..	5	1	12	9	2	2	8
Diphtheria and Membr. Croup ...	6	6	2	3	4	6	...
Croup ... ..	...	...	1	1	...	...	...
Fever {	Typhus ... ..	...	...	...	...	...	...
Other continued	...	...	...	...	...	...	...
Epidemic Influenza ... ..	10	11	5	7	11	9	7
Cholera ... ..	...	...	...	...	...	...	...
Ague ... ..	...	...	...	...	1	...	...
Diarrhœa ... ..	24	3	7	7	8	17	4
Enteritis ... ..	4	1	3	4	2	4	3
Erysipelas ... ..	1	...	...	...	1	...	1
Other Septic Diseases ... ..	3	1	2	1	2	1	2
Other Septic Diseases ... ..	3	7	2	2	2	2	1
Phthisis ... ..	26	27	38	29	20	35	39
Other Tubercular Diseases ...	17	11	14	11	9	15	15
Cancer, Malignant Disease ...	37	32	35	31	32	28	28
Tracheitis ... ..	24	30	22	50	35	39	35
Pneumonia ... ..	42	35	21	33	26	31	29
Aneurysm ... ..	...	2	3	1	2	...	3
Other Diseases of Respiratory Organs	1	6	4	1	3	...	4
Alcoholism, Cirrhosis of Liver ...	4	8	10	11	5	6	9
Genereal Disease ... ..	...	1	3	...	...	...	1
Premature Birth ... ..	2	5	13	13	9	13	10
Diseases and accidents of Par- turation	2	...	5	2	...	...	1
Heart Diseases ... ..	53	36	36	45	46	42	56
Accidents ... ..	6	6	5	7	2	12	10
Suicides ... ..	3	7	5	6	3	8	2
Injuries ... ..	1	...	1	2	...	...	...
All other causes ... ..	136	151	151	157	147	174	144
Total ... ..	413	412	410	439	382	448	417



*Death-rates per thousand of the population from the principal diseases  
given in the previous table, 1901 to 1907.*

NAME OF DISEASE	1901	1902	1903	1904	1905	1906	1907
Measles ... ..	0·02	0·48	0·16	0·02	0·18	0·10	0·05
Scarlet Fever ... ..	0·02	0·20	0·08	0·08	0·02	...	...
Whooping Cough ... ..	0·14	0·02	0·33	0·24	0·05	0·05	0·20
Diphtheria and Mem- branous Croup	0·17	0·17	0·05	0·08	0·10	0·15	...
Enteric Fever ... ..	0·02	0·02	0·02	0·05	0·05	...	0·07
Epidemic Influenza ... ..	0·29	0·30	0·13	0·18	0·28	0·20	0·17
Diarrhœa ... ..	0·70	0·08	0·19	0·18	0·21	0·43	0·10
Phthisis ... ..	0·76	0·77	1·05	0·78	0·52	0·89	0·97
Other Tubercular Diseases	0·50	0·31	0·38	0·29	0·23	0·38	0·37
Cancer, Malignant Diseases	1·08	0·91	0·97	0·83	0·84	0·71	0·70
Diseases of the Respira- tory Organs	1·97	2·08	1·38	2·29	1·73	1·79	1·77
Alcoholism, Cirrhosis of Liver	0·11	0·22	0·27	0·29	0·13	0·15	0·22
Heart Diseases ... ..	1·55	1·02	1·00	1·21	1·21	1·07	1·40

The zymotic death-rate (Measles, Scarlet Fever, Whooping Cough, Diphtheria, Membranous Croup, Enteric Fever, Puerperal Fever, Plague, Erysipelas, and Diarrhœa) amounts to 0·50, compared with 0·76 in 1906.

*\* Zymotic death-rates of the different townships in 1906 and 1907.*

	1906	1907
Withington, including Whalley Range..	0·65 . . .	0·38
Didsbury .. .. .	0·77 ....	0·56
Choriton-cum-Hardy .. .. .	0·97 ....	0·42
Burnage .. .. .	0·49 ....	1·45

*A summary of the action taken during the year for preventing the spread of disease.*

*Smallpox.*—No case occurred.

*Measles.*—The following table shows the distribution of the disease throughout the district as regards month and place:—

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Total
January .. .. .	—	—	—	—	—
February .. .. .	5	—	—	—	5
March .. .. .	11	1	—	4	16
April .. .. .	8	—	—	2	10
May .. .. .	4	2	1	1	8
June .. .. .	14	—	5	—	19
July .. .. .	18	—	3	1	22
August .. .. .	—	—	1	28	29
September .. .. .	—	1	—	5	6
October .. .. .	—	2	1	—	3
November .. .. .	—	2	—	—	2
December .. .. .	—	2	1	—	3
	60	10	12	41	123

As in 1906, the Withington Township has been the chief sufferer from this disease. The schools principally affected were the Municipal School, Mauldeth Road, and the Municipal School, Manley Park. In the case of the latter school the epidemic assumed such threatening proportions towards the end of July that it was decided to close the infants' department. A small outbreak occurred in August in connection with St. Margaret's School, Burnage, but beyond warning the school, and excluding other members of the family, no action was taken. Printed precautions have been left at the houses where the disease has occurred, and also at other houses in the immediate neighbourhood.

The two deaths from Measles, both of which were of children under 5 years of age, give a case mortality of 1·6 per cent.

*Scarlet Fever.*—The following table shows the number and distribution of cases of scarlet fever, and the number of patients removed to hospital, during the year 1907:—

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Total	Number removed to Hospital
January .. .. .	6	1	10	—	17	8
February .. .. .	3	2	4	—	9	7
March .. .. .	6	—	5	—	11	4
April .. .. .	1	—	1	—	2	1
May .. .. .	1	3	6	—	10	4
June .. .. .	6	1	10	—	17	9
July .. .. .	5	—	4	—	9	6
August .. .. .	7	—	3	1	11	7
September .. .. .	5	—	3	—	8	6
October .. .. .	3	1	1	—	5	3
November .. .. .	1	3	3	—	7	3
December .. .. .	17	2	3	—	22	13
	61	13	53	1	128	71

In December the Whalley Range division of the Withington Township suffered severely from the prevalence of this fever, but efforts to ascertain the cause were unsuccessful.

The attack-rate for the whole district was 3·2 per thousand, compared with 2·9 in 1906, and 3·5 in 1905.

The case mortality for 1907 was nil, compared with 0·0 per cent. in 1906, and 0·7 per cent in 1905.



*Diphtheria and Membranous Croup.*—The following table shows the number and distribution of cases of Diphtheria, and the number of patients removed to hospital during the year 1907:—

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Totals	Number removed to Hospital
January .. .. .	—	—	3	1	4	3
February .. .. .	—	1	—	—	1	—
March .. .. .	—	—	1	1	2	—
April .. .. .	—	1	—	—	1	—
May .. .. .	1	—	1	—	2	2
June .. .. .	—	—	—	—	—	—
July .. .. .	1	—	1	—	2	—
August .. .. .	1	1	—	—	2	—
September .. .. .	—	—	—	—	—	—
October .. .. .	1	2	1	—	4	2
November .. .. .	—	3	—	—	3	—
December .. .. .	—	2	—	1	3	2
	4	10	7	3	24	9

During the year 49 swabs were examined, and in nine instances diphtheria bacilli were found to be present. Of the 24 cases of the disease notified, 14 only were tested—eight with a positive result.

The attack rate for the whole district was 0·6 per thousand, compared with 1·6 in 1906, 1·3 in 1905, and 0·7 in 1904.

The case mortality for the year was nil, compared with 9 per cent., in 1906 and 8 per cent. in 1905.

Seventy-two phials of diphtheria antitoxin were supplied to the medical profession of the district during the year.

*Whooping Cough.*—271 cases of Whooping Cough were reported during the year, and eight deaths were registered, all of which were of children under five years of age.

*Enteric Fever.*—Twenty-one cases of Enteric Fever were reported during the year, three of which proved fatal. The average yearly number of cases during the previous ten years was 12.

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Totals	Number removed to Hospital
January .. .. .	I	—	I	—	2	I
February .. .. .	I	—	—	—	I	—
March .. .. .	—	—	I	—	I	I
April .. .. .	I	—	—	—	I	—
May .. .. .	—	I	—	—	I	—
June .. .. .	—	—	—	—	—	—
July .. .. .	—	—	I	—	I	I
August .. .. .	—	—	6	—	6	4
September .. ..	I	—	7	—	8	7
October .. .. .	—	—	—	—	—	—
November .. ..	—	—	—	—	—	—
December .. .. .	—	—	—	—	—	—
	4	I	16	—	21	14

In twelve of the above cases the Widal reaction was obtained.

In three other instances the test was made, but with a negative result. The attack-rate for the whole district was 0.55, compared with 0.3 per thousand in 1906.

The case-mortality was 14.2 per cent.

Thirteen of the fourteen cases removed were sent to Monsall Hospital.

In August and September an interesting series of cases occurred in Chorlton-cum-Hardy which were traced to a common milk supply. The owner of the farm from which the milk was obtained was found on enquiry to be suffering from typhoid fever.

His blood gave a positive reaction. Precautions were immediately taken. The patient was removed to hospital, thorough disinfection of the premises was carried out, and the other members of the family were kept for a time under close observation. These measures proved successful in stopping the spread of the disease.

During the course of a case of Enteric Fever, a pail for the evacuations has been provided and changed weekly. On the termination of any case, both water-closet and ashpit have been thoroughly disinfected with a solution of corrosive sublimate.

*Erysipelas*.—Seventeen cases of erysipelas were notified during the year, two of which died. In each case enquiries were made as to whether a monthly or district nurse was in attendance. In all cases the necessary disinfection has been carried out.

*Puerperal Fever*.—Three cases of this disease occurred. Two were removed to Monsall Hospital, one of which died. The bedding was stoved, and the dresses and instruments of the nurses who had been in attendance were disinfected.

*Phthisis*.—Thirty-nine deaths from phthisis were recorded in 1907. Disinfection was carried out completely after 38 fatal cases. The remaining case occurred in a public institution. 46 specimens of sputum were examined during the year, with the result that in 15 the tubercle bacilli was found to be present.

In addition to disinfection after fatal cases, it was carried out during life in 12 other instances after removals, etc.

The following table shows the number of cases in which rooms and bedding have been disinfected after Phthisis for each year since the practice was commenced (March 8th, 1900) :—

	1900	1901	1902	1903	1904	1905	1906	1907
Fatal cases of Phthisis .. .. .	38	26	27	38	29	20	35	39
Rooms of patients disinfected, paper stripped, walls washed down with one per cent. chloride of lime solution, and bedding stoved ..	11	20	20	30	24	24	37	89
Partial disinfection .. .. .	3	1	4	1	2	3	4	14
Disinfection refused .. .. .	24	5	3	7	7	—	1	1

The above figures relate to all patients suffering from Phthisis reported either as having died or as having removed to other premises.



*Removal to Hospital.*—The number of patients removed to hospital is as follows :—

Disease	Baguley Sanatorium	Monsall Hospital	Chorlton Union Workhouse
Diphtheria .. .. .	9	—	—
Erysipelas .. .. .	—	1	3
Scarlet Fever .. .. .	68	2	1
Enteric Fever .. .. .	—	13	1
Puerperal Fever .. .. .	—	2	—
Plague .. .. .	—	—	—
	77	18	5

The number of patients who have suffered from Scarlet Fever, Diphtheria, and Enteric Fever in the district in each of the years from 1895 to 1907, together with the annual number of removals to hospital, is shown in the following table :—

Year	Number of Cases of Fever in the District	Removed to Hospital	Percentage
1895	S.F. 102. D. 22. E. 20—Total 144 .. ..	49	34
1896	S.F. 120. D. 13. E. 10— „ 143 .. ..	63	44
1897	S.F. 177. D. 16. E. 10— „ 203 .. ..	121	59
1898	S.F. 70. D. 22. E. 25— „ 117 .. ..	54	46
1899	S.F. 68. D. 16. E. 16— „ 100 .. ..	28	28
1900	S.F. 204. D. 14. E. 8— „ 226 .. ..	120	53
1901	S.F. 245. D. 31. E. 11— „ 287 .. ..	162	56
1902	S.F. 109. D. 26. E. 6— „ 141 .. ..	73	51
1903	S.F. 85. D. 31. E. 14— „ 130 .. ..	58	44
1904	S.F. 80. D. 28. E. 5— „ 113 .. ..	43	38
1905	S.F. 136. D. 50. E. 6— „ 192 .. ..	92	47
1906	S.F. 113. D. 64. E. 12— „ 189 .. ..	133	70
1907	S.F. 128. D. 24. E. 21— „ 173 .. ..	96	55

*Disinfection.*—The total number of articles stoved in 1907 was 5,356, and consisted of the following :—Beds, 227 ; mattresses, 334 ; pillows, 775 ; blankets, 688 ; counterpanes, 295 ; carpets, 517 ; various articles of clothing, 1,651 ; and sundries, 869.

WATER SUPPLY OF THE WITHINGTON DISTRICT.

The greater part of the district is supplied with Manchester water coming from the Audenshaw reservoir, but there are a few outlying premises which are still dependent upon shallow wells. All the farms, however, are supplied with Manchester water with the exception of two, but in these cases steps are being taken to provide a wholesome supply of water.

*Building in the district during 1907.*—The total number of houses certified as fit for habitation during the year ending December 31st, 1907, was 506, distributed as follows :—Withington (including Whalley Range) 276 ; Didsbury 95 ; Chorlton-cum-Hardy 122 ; and Burnage 13. In all these the drains and other sanitary arrangements have been tested by the Inspector of New Buildings.

*Notices served during the year for the alteration of insanitary conditions.*

	Notices	Houses concerned
Under Section 46 M.I. Act, 1845 .. ..	4	4
Under Section 41 M.N.S. Act, 1853 ..	3	13
Under Section 41 P.H. Act, 1875 .. ..	14	19
„ „ 36 „ „ „ .. ..	10	55
Under Sections 91 to 94 P.H. Act .. ..	29	181
„ Dairies and Cowshed Orders ..	2	2
Town Clerk Notices .. .. .	96	248
	158	522

Premises redrained throughout and water tested—126.

Insanitary premises altered without notices—104.

Defective water-closets replaced by new ones—61.

Premises inspected as to their sanitary condition after the notification of cases of infectious fever, including phthisis—201.

Premises disinfected after fevers, including phthisis—208 houses (399 rooms).

Premises smoke-tested—8.

Privies dismantled and sites made good—247.

Water-closets of approved pattern substituted for privies—207.

Galvanized iron receptacles provided—346.

Ashpits dismantled and sites made good—185.

*Dairies and Cowsheds.*—The cowsheds have been regularly inspected during the year. Four new sheds have been constructed with accommodation for thirty-five cows.

*Slaughter-houses.*—The four slaughter-houses in use in the district are frequently inspected, and are conducted in a satisfactory manner.

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REPORT ON THE ADMINISTRATION OF THE FACTORY AND WORKSHOP ACT, 1901,  
IN SO FAR AS THIS ADMINISTRATION IS IN THE HANDS OF THE WITHINGTON  
COMMITTEE, AND IS CONCERNED WITH MATTERS IN THE DEPARTMENT OF  
THE ASSISTANT MEDICAL OFFICER OF HEALTH.

I.—*Workshops.*

The number of workshops now on the register is 627.

The cubic capacity of each workshop has been measured, and cards have been placed in each room showing the maximum number of workpeople allowed.

Attention has been given to the cleanliness and ventilation of the workshops.

In 79 cases the walls and ceilings of the workshops were found to be in a dirty condition, and verbal instructions were given by the Inspector to have the premises cleansed.

This request has, in each instance, been sufficient to cause the premises to be cleansed without legal notice.

In seven workshops the sanitary accommodation was found to be unsatisfactory, and was reported by the Inspector to the Medical Officer of Health. In two instances there was no accommodation for the workmen. In one



instance satisfactory closet accommodation has been provided upon a verbal request being made. In the second case the owner of the premises has been served with a notice to provide sanitary accommodation.

In two cases certain defects existing in the closets were made good after legal notices had been served.

In the three remaining cases, certain defects existing in the closets were made good after verbal instructions being given, and legal notices have not been necessary.

In three instances overcrowding of the workshop was found, but the nuisance has been abated at once upon verbal instructions being given, fresh accommodation having been found.

2.—*Bakehouses.*

There are now on the register 51 bakehouses, which, on the whole, are kept in a clean and satisfactory condition. In 37 instances during the year it has been found necessary to call the attention of the occupiers to the state of the walls, etc., and to request them to have them cleansed. In all cases this has been done without legal notice.

All the bakehouses comply with the Act in not having any sanitary convenience or ashpit communicating directly with them; in not having any cistern for supplying water to them connected in any way with a water-closet; in having no drain openings inside; and in having no sleeping place connected with them.

The bakehouses are distributed over the district as follows:—

Chorlton-cum-Hardy .. .. .	19
Withington .. .. .	20
Didsbury .. .. .	11
Burnage .. .. .	1
	—
	51

There are no cellar-bakehouses in the district.

3.—*Homework.*

Information with regard to persons in the district taking in homework from places of business outside the district has been received in 18 instances during the year. These premises have been inspected and registered, as in the case of other workshops. The number of visits paid during the year to premises in which homework has been carried on is 117. No infectious fevers have been notified during the year as occurring in connection with the premises occupied by homeworkers.

In three instances employers living in this district have been reported as giving out work to homeworkers who live in other districts. The names and addresses of these homeworkers have been sent to the sanitary authorities of the districts in which they live.

4.—*Workplaces.*

Under this heading the following are classified :—

New buildings in course of erection, 107 ; fish and game shops, 13 ; Cab-yards and stables, 11 ; slaughter-houses, 4—total 135.

In the case of new buildings, it was found that in 12 instances no sanitary accommodation existed for the workmen. A verbal request was sufficient to have satisfactory accommodation provided. In five instances the accommodation provided for the men was found to be unsatisfactory, but upon a verbal request being made the necessary alterations were carried out.

Total number of visits to workplaces during the year, 441.

5.—*Factories.*

There are 20 places in the Withington district in which mechanical power is used.

These are as follows :—

Laundries, 6 ; printers, 3 ; bootmakers, 2 ; joiners, 2 ; cycle makers, 2 ; brickworkers, 2 ; sawmill, 1 ; blacksmith, 1 ; and mechanics, 1. Total number of visits to factories during the year, 97.

*Workshops.*

Number of visits	Number in which Sanitary defects were found and reported to the Medical Officer of Health	Number of reports referred to Factory Inspector (unregistered workshops)	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits to houses where out-workers are employed	Factories and Workshops not provided with proper means of escape in case of fire
3360	12	6	0	33	627	117	0

Bakehouses.

Number of visits	Number in which Sanitary defects were found	Number of reports referred to Factory Inspector	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register
346	3	0	0	4	51

1.—INSPECTION.

Premises	Number of		
	Inspections	Written Notices	Prosecutions
Factories... ..	97	0	0
Workshops ... ..	2705	3	0
Workplaces ... ..	441	0	0
Homeworkers' Premises ... ..	117	0	0
Total ... ..	3360	3	0

2.—DEFECTS FOUND.

Particulars	Number of Defects			No. of Prosecutions
	Found	Remedied	Referred to H.M. Inspector	
<i>Nuisances under the Public Health Acts :—</i>				
Want of cleanliness ... ..	116	116	0	0
Want of ventilation ... ..	2	2	0	0
Overcrowding ... ..	3	3	0	0
<i>Sanitary Accommodation (Section 22 adopted)</i>				
Insufficient ... ..	14	13	0	0
Defective ... ..	10	10	0	0
Not separate for Sexes... ..	0	0	0	0
Offences under the Factory and Workshop Act ... ..	0	0	0	0
	145	144	0	0



3.—OTHER MATTERS.

Class	Number
Matters notified to H. M. Inspectors of Factories :—	
Failure to affix abstract of the Factory and Workshop Act (S. 133) ... ..	6
Action taken in matters referred by H. M. Inspectors as remediable under the Public Health Acts but not under the Factory Act (S. 5)—	
Notified by H. M. Inspector ... ..	0
Reports (of action taken) sent to H. M. Inspectors.	0
Other ... ..	0
Underground Bakehouses (S. 101) :—	
In use during 1903... ..	8
Certificate granted { in 1904... ..	0
in 1905... ..	0
In use at the end of 1905 ... ..	0
Homework :—	
<i>List of Outworkers (S. 107) :—</i>	
Lists received ... ..	
Addresses of outworkers { forwarded to other authorities	
received from other authorities	
<i>Homework in unwholesome or infected premises :—</i>	
Notices prohibiting homework in unwholesome premises (S. 108) ... ..	
Cases of infectious disease notified in homemaker's premises ... ..	
Orders prohibiting homework in infected premises (S. 110) ... ..	
Workshops on the Register (S. 131) at the end of 1907 :—	
Dressmaking ... ..	134
Bootmakers ... ..	66
Joiners ... ..	34
Plumbers ... ..	25
Blacksmiths and Wheelwrights ... ..	16
Decorators ... ..	17
Millinery ... ..	38
Ironmongers ... ..	15
Cabinetmakers ... ..	15
Tailors ... ..	20
Bakers ... ..	51
Laundries ... ..	11
Hairdressers ... ..	13
Monumental Masons ... ..	5
Saddlers ... ..	8
Printers ... ..	3
Watchmakers ... ..	7
Picture Framing ... ..	1
Knitting ... ..	1
Golf Balls ... ..	1
Cycles ... ..	6
Bottling Stores ... ..	1
Brickworks ... ..	2
Workplaces ... ..	135
Rubber Heel Works ... ..	1
Mechanics ... ..	1
Total number of Workshops on Register ... ..	627

# TABLES.

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TABLE A.—MANCHESTER, 1907.  
CAUSES OF DEATH AT DIFFERENT LIFE PERIODS IN THE 52 WEEKS OF THE YEAR.  
PERSONS.—(MALES AND FEMALES.)

CAUSES OF DEATH	AGES AT DEATH													
	All Ages	UNDER 5 YEARS		5	10	15	20	25	35	45	55	65	75	85 and upwards
		0 to 1	1 to 5	to 10	to 15	to 20	to 25	to 35	to 45	to 55	to 65	to 75	to 85	
All Causes .....	11508	2691	1429	274	118	203	248	714	984	1291	1500	1325	631	100
A.—GENERAL DISEASES.....	4119	1115	747	158	52	100	130	332	410	463	374	186	47	5
B.—LOCAL DISEASES.....	6044	995	579	95	52	89	103	344	507	774	1049	988	415	54
C.—OTHER SPECIFIED DIS..	6	2	...	1	...	...	...	1	1	...	1	...	...	...
D.—ILL-DEFINED DISEASES...	836	471	36	1	...	...	...	...	3	3	18	111	156	37
E.—VIOLENT DEATHS .....	503	108	67	19	14	14	15	37	63	51	58	40	13	4
A.—General Diseases.														
Smallpox.. { Vaccinated .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Not Vaccinated ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ No Statement.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cowpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chickenpox .....	3	2	1	...	...	...	...	...	...	...	...	...	...	...
Measles .....	229	54	165	9	...	...	...	...	...	1	...	...	...	...
Epidemic Rose Rash .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever.. .....	102	7	55	28	6	2	1	3	...	...	...	...	...	...
Typhus .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Relapsing Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Influenza .....	111	3	4	3	2	3	4	10	8	19	23	17	13	...
Whooping Cough .....	314	121	179	13	1	...	...	...	...	...	...	...	...	...
Mumps .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria and Memb : Croup	106	11	69	24	1	...	...	1	...	...	...	...	...	...
Cerebro-spinal Fever .....	4	2	...	1	...	...	...	1	...	...	...	...	...	...
Simple Cont : Fever.....	2	1	...	...	...	...	...	...	1	...	...	...	...	...
Enteric Fever .....	37	...	1	3	1	3	3	13	6	7	...	...	...	...
Asiatic Cholera .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epidemic Diarrhœa .....	239	193	41	1	1	...	...	...	1	...	2	...	...	...
Diarrhœa .....	52	29	11	...	1	...	...	...	1	1	3	4	2	...
Dysentery .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Malarial Fever.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hydrophobia .....														
Glanders.....														
Anthrax .....														
Tetanus .....														
Syphilis .....	50	39	4	...	...	...	...	3	2	2	...	...	...	...
Gonorrhœa, Strict : Urethra....	6	...	...	...	...	...	...	2	...	2	1	1	...	...
Puerperal.. { Septicæmia .....														
{ Pyæmia .....														
{ Phlegmasia Dol : .....														
{ Fever.....														
Infective Endocarditis .....	6	...	...	...	...	1	2	...	2	...	...	1	...	...
Epidemic Pneumonia } .....	7	...	...	...	...	...	2	1	...	3	1	...	...	...
Pneumonic Fever        }	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Erysipelas .....	19	4	1	...	...	...	...	1	3	2	4	3	1	...
Septicæmia (not puerp :).....	14	4	...	2	...	1	1	1	1	2	1	1	...	...
Pyæmia (not puerp :).....	6	2	...	...	1	1	...	1	...	...	1	...	...	...
Phlegmon .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phagedœna .....	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Other Septic Diseases.....	7	1	1	...	...	1	2	...	...	1	1	...	...	...
Tubercular Phthisis.....														
Phthisis .....	31	...	1	...	...	1	1	5	10	8	3	2	...	...





TABLE A, 1907—continued.

CAUSES OF DEATH	AGES AT DEATH													
	All Ages	UNDER 5 YEARS		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
3. DISEASES OF HEART.														
Valvular Dis : Endocarditis ....	306	...	4	6	7	15	17	35	42	62	67	38	11	2
Pericarditis .....	7	...	1	2	...	...	2	...	...	1	...	1	...	...
Hypertrophy of Heart.....	7	...	...	...	...	...	...	...	...	2	1	3	1	...
Angina Pectoris .....	19	...	...	...	...	...	...	...	1	2	8	7	1	...
Dilatation of Heart .....	124	...	1	...	...	...	...	2	8	19	42	42	8	2
Fatty Degen : of Heart .....	29	...	...	...	...	...	...	1	2	7	8	8	3	...
Syncope, Heart Disease.....	637	4	1	1	4	11	12	28	51	86	136	175	113	15
4. DIS: OF BLOOD VESSELS.														
Cerebral Hæmorrhage.....	354	4	2	...	1	1	1	10	24	63	84	115	40	9
Apoplexy, Hemiplegia.....	77	...	...	...	...	...	...	...	3	7	22	31	14	...
Aneurism ..	13	...	...	...	...	...	...	1	2	1	7	1	1	...
Senile Gangrene .....	16	...	...	...	...	...	...	...	...	...	2	8	6	...
Embolism, Thrombosis .....	8	1	...	...	...	...	...	1	4	...	1	...	1	...
Phlebitis.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Varicose Veins .....	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Blood Vessels (Other Diseases)	27	...	...	...	...	...	...	...	2	4	8	10	3	...
5. DIS: OF RESPIRATORY SYS:														
Laryngitis .....	28	2	16	6	1	1	...	1	...	...	1	...	...	...
Membr Laryng: (Not Diphth:)	1	...	1	...	...	...	...	...	...	...	...	...	...	...
Croup .....	5	1	3	1	...	...	...	...	...	...	...	...	...	...
Larynx (Other Dis: ) .....	2	1	1	...	...	...	...	...	...	...	...	...	...	...
Bronchitis .....	1,298	278	121	7	2	3	5	14	53	130	274	275	122	14
Pneumonia { Lobar.....	469	27	27	10	6	12	16	76	74	99	62	46	12	2
{ Broncho.....	741	289	249	17	4	2	3	24	24	43	43	25	16	2
"Pneumonia".....	113	24	16	2	1	2	1	7	19	13	14	9	4	1
Emphysema, Asthma .....	24	...	...	...	...	...	...	4	2	6	5	6	1	...
Pleurisy .....	41	2	1	2	1	2	...	2	7	5	10	9	...	...
Fibroid Disease of Lung.....	5	...	...	...	...	...	1	1	...	1	1	1	...	...
Respiratory Dis: (Other) .....	39	5	3	3	...	2	...	...	3	7	8	4	3	1
6. DIS: OF DIGESTIVE SYS:														
Tonsillitis, Quinsy .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mouth, Pharynx .....	25	17	4	1	1	...	...	...	...	1	...	1	...	...
Gastric Ulcer.....	19	...	...	...	...	1	4	3	6	3	2	...	...	...
Gastric Catarrh.....	21	9	5	1	...	...	...	1	...	2	1	1	...	1
Stomach (Other Dis: ).....	51	20	3	1	1	1	1	...	2	6	7	6	2	1
Enteritis.....	62	40	7	1	...	1	1	1	2	2	1	6	...	...
Gastro-Enteritis.....	36	22	6	2	...	...	1	...	1	1	2	1	...	...
Appendicitis, Perityph : .....	30	...	1	4	5	7	4	5	2	1	1	...	...	...
Hernia .....	24	2	1	...	...	1	2	2	4	2	7	2	1	...
Intestinal Obstruct:.....	36	6	2	1	...	...	1	7	4	3	4	5	3	...
Other Diseases of Intestines ...	31	12	1	...	...	...	1	6	1	4	6	...	...	...
Peritonitis .....	28	1	4	1	...	3	3	3	5	5	3	...	...	...
Cirrhosis of Liver.....	74	1	...	...	...	...	...	6	16	21	20	10	...	...
Liver and Gall Bladder (O.D.).	53	27	1	...	...	1	...	...	3	7	10	4	...	...
Digestive System (Other Dis: )...	27	20	2	...	...	...	1	1	1	1	...	...	1	...
7. DIS: OF LYMPHATIC AND DUCTLESS GLANDS.														
Spleen, Disease of.....	5	1	2	...	...	...	...	...	2	...	...	...	...	...
Lymphat: Syst: (Other Dis: )...	7	1	...	...	1	...	1	1	...	3	1	...	...	...
Thyroid Body (Other Dis: ) ...	5	...	...	...	...	...	...	...	1	3	1	...	...	...
Supra Renal Caps: (Dis: of)...	2	...	...	...	...	...	...	...	...	...	1	1	...	...
8. DISEASES OF URINARY SYSTEM.														
Nephritis Ac:, Uræmia .....	95	3	8	4	2	3	6	13	15	20	11	9	1	...
Ch : Bright's Dis : Albumin : ...	203	...	2	...	3	1	2	19	28	38	59	41	10	...
Calculus .....	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Bladder and Prostate Dis: ...	51	1	...	...	...	...	3	2	3	3	13	20	5	1
Urinary Syst : (Other Dis: ) ...	9	...	...	1	...	...	...	...	1	1	2	4	...	...



TABLE A, 1907—concluded.

CAUSES OF DEATH	AGES AT DEATH													
	All Ages	UNDER 5 YEARS		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
9. DISEASES OF GENERATIVE SYSTEM.														
Ovarian Tumour .....	9	...	...	...	...	...	...	...	4	3	...	I	I	...
Other Dis : of Ovary .....	I	...	...	...	...	...	...	...	...	...	I	...	...	...
Uterine Tumour .....	3	...	...	...	...	...	...	...	2	I	...	...	...	...
Other Dis: of Uterus and Vagina	I	...	...	...	...	...	...	I	...	...	...	...	...	...
Disord : of Menstruation .....	I	...	...	...	...	...	...	...	...	I	...	...	...	...
Gener: and Mam: Orgs: (other)	7	I	...	...	...	...	...	2	2	...	I	I	...	...
10. DISEASES OF PREGNANCY AND CHILDBIRTH.														
Abortion, Miscarriage .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Mania .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Convulsions .....	6	...	...	...	...	I	2	3	...	...	...	...	...	...
Placenta Præv: Flooding.....	8	...	...	...	...	...	I	4	2	I	...	...	...	...
Other Ac: of Preg: & Childbirth	9	...	...	...	...	...	I	6	2	...	...	...	...	...
11. DISEASES OF LOCOMOTOR SYSTEM.														
Caries, Necrosis .....	II	...	I	3	I	2	I	I	I	...	I	...	...	...
Arthritis, Periostitis .....	3	...	...	...	2	...	...	...	...	...	I	...	...	...
Locomotor Sys : (Other).....	II	I	2	2	...	I	...	...	...	I	2	I	...	I
12. DISEASES OF THE SKIN.														
Ulcer, Bedsore .....	8	...	...	...	...	...	...	...	...	I	...	5	2	...
Eczema .....	2	I	I	...	...	...	...	...	...	...	...	...	...	...
Pemphigus.....	4	3	...	...	...	...	...	...	I	...	...	...	...	...
Skin Diseases (other) .....	8	4	2	...	...	...	...	...	...	...	2	...	...	...
C.—Other Specified Diseases	6	2	...	I	...	...	...	I	I	...	I	...	...	...
D.—Ill-defined and not Specified Diseases.														
Atrophy, Debility.....	544	465	36	I	...	...	...	...	...	...	5	17	17	3
Old Age .....	277	...	...	...	...	...	...	...	...	...	12	93	138	34
Dropsy, Ascites, Anasarca .....	I	...	...	...	...	...	...	...	...	...	...	I	...	...
Tumour .....	I	...	...	...	...	...	...	...	...	I	...	...	...	...
Abscess .....	2	I	...	...	...	...	...	...	...	I	...	...	...	...
Hæmorrhage .....	4	2	...	...	...	...	...	...	I	...	...	...	I	...
Sudden (cause unascertained)...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Ill-defined .....	7	3	...	...	...	...	...	...	2	I	I	...	...	...
E.—Violent Deaths.														
. ACCIDENT.														
In Mines and Quarries.....	I	...	...	...	...	...	...	I	...	...	...	...	...	...
By Vehicles { On Railways ...	8	...	...	...	...	2	I	I	...	2	2	...	...	...
{ In Streets.....	39	...	9	5	I	...	...	3	4	3	9	4	I	...
Ships, Boats, Docks (not Drowning) .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Building Operations .....	2	...	...	...	...	...	...	I	...	I	...	...	...	...
Machinery .....	6	...	...	...	I	I	...	...	3	...	...	I	...	...
Weapons and Implements .....	2	...	I	...	...	...	I	...	...	...	...	...	...	...
Burns and Scalds .....	100	10	46	9	7	...	I	6	4	6	2	8	I	...
Poison, Poisonous Vapours.....	9	...	...	...	I	...	3	I	3	...	I	...	...	...
Drowning .....	30	I	2	4	I	...	I	2	9	4	2	4	...	...
Suffocation.....	107	96	I	...	I	...	I	I	3	3	...	I	...	...
Falls .....	97	...	6	I	I	5	I	5	10	17	23	16	9	3
Weather Agencies.....	I	...	...	...	...	...	...	...	I	...	...	...	...	...
Otherwise or not Stated .....	26	I	2	...	I	3	4	2	5	2	2	3	...	I
. HOMICIDE.														
5	...	...	...	...	...	...	...	I	3	I	...	...	...	...
. SUICIDE.														
69	...	...	...	...	...	3	2	13	17	12	17	3	2	...
. EXECUTION.														
I	...	...	...	...	...	...	...	...	I	...	...	...	...	...



TABLE B.—MANCHESTER, 1907.  
CAUSES OF DEATHS AT DIFFERENT LIFE PERIODS—MALES.

Classes	CAUSES OF DEATH	All Ages Total	AGES AT DEATH—IN YEARS												
			UNDER 5 YEARS		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upward
			0 to 1	1 to 5											
	All Causes.....	6020	1550	724	127	58	103	134	382	541	715	821	595	242	28
A	Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Measles .....	124	26	93	4	...	...	...	...	...	1	...	...	...	...
	Scarlet Fever .....	55	5	30	15	2	1	...	2	...	...	...	...	...	...
	Typhus Fever.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Whooping Cough .....	146	64	76	6	...	...	...	...	...	...	...	...	...	...
	Diphtheria, Memb: Croup .....	50	7	32	11	...	...	...	...	...	...	...	...	...	...
	Ill-defined Fever.....	1	1	...	...	...	...	...	...	...	...	...	...	...	...
	Enteric Fever .....	24	...	1	1	1	3	2	10	2	4	...	...	...	...
	Influenza .....	50	1	3	...	2	1	3	4	6	10	9	4	7	...
	Epidemic Diarrhœa .....	124	105	16	1	1	...	...	...	1	...	...	...	...	...
	Diarrhœa, Dysen., Simple Chol.	28	17	6	...	1	...	...	...	1	1	1	1	...	...
	Venereal Affections.....	30	18	1	...	...	...	...	4	2	3	1	1	...	...
	Erysipelas .....	8	2	...	...	...	...	...	...	1	2	2	1	...	...
	Pyæmia, Septicæmia .....	14	4	1	...	1	2	1	...	...	1	3	1	...	...
	Puerperal Fever ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Other Zymotics .....	13	3	...	1	...	...	3	2	1	1	1	1	...	...
	Tuberc. Periton: Tabes Mes: ...	56	19	25	5	...	2	...	2	1	1	1	...	...	...
	Tubercular Meningitis .....	73	22	33	14	1	2	...	...	...	...	1	...	...	...
	Phthisis.....	708	2	15	9	3	26	51	144	184	148	99	25	2	...
	Tuberculous Dis. (other) .....	81	18	18	10	5	3	3	3	8	9	4	...	...	...
B and C	Parasitic Diseases .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Alcoholism .....	34	...	...	...	...	...	...	5	11	10	5	2	1	...
	Rheumatic Fever.....	17	...	1	1	2	1	...	6	3	1	2	...	...	...
	Cancer .....	206	...	...	...	1	2	1	3	13	61	74	41	10	...
	Premature Birth.....	226	226	...	...	...	...	...	...	...	...	...	...	...	...
	Congenital Defects.....	73	71	2	...	...	...	...	...	...	...	...	...	...	...
	Epilepsy .....	22	...	...	...	2	1	...	2	6	5	4	2	...	...
	Convulsions .....	78	70	7	1	...	...	...	...	...	...	...	...	...	...
	Nervous Syst: (other) .....	245	23	29	3	3	3	3	22	46	37	38	25	13	..
	Cereb: Haem: Apoplexy, Hemip:	203	2	1	...	1	1	1	4	11	31	60	63	25	3
	Heart and Blood Vessel Dis: ...	551	1	2	3	7	13	12	28	52	89	149	127	59	9
	Croup .....	1	1	...	...	...	...	...	...	...	...	...	...	...	...
	Bronchitis .....	615	170	53	4	2	3	2	10	16	61	140	111	38	5
	Pneumonia .....	733	182	149	9	5	6	14	61	79	110	70	32	14	2
	Respiratory Dis: (other) .....	79	6	15	5	2	3	1	6	8	11	11	10	1	...
	Digestive Syst: (other) .....	277	103	25	5	2	11	14	17	19	28	33	17	2	1
	Urinary Syst: (other).....	211	1	4	3	5	2	6	16	21	37	52	53	10	1
	Generative Organs .....	1	1	...	...	...	...	...	...	...	...	...	...	...	...
	Other specified Diseases .....	158	48	30	6	3	7	5	9	8	20	12	10	...	...
	D	Marasmus and Atrophy.....	317	274	19	...	...	...	...	...	...	4	10	9	1
Old Age .....		94	...	...	...	...	...	...	...	...	8	34	46	6	...
Other Ill-defined Causes .....		9	5	...	...	...	...	...	...	1	2	...	1	...	...
E	Violence .....	234	52	37	10	6	9	10	13	26	23	22	22	4	...
	Homicide .....	3	...	...	...	...	...	...	...	2	1	...	...	...	...
	Suicide .....	48	...	...	...	...	1	2	9	12	7	15	1	1	...

TABLE C.—MANCHESTER, 1907.  
CAUSES OF DEATHS AT DIFFERENT LIFE PERIODS—FEMALES.

Classes	CAUSES OF DEATH	All Ages  Total	AGES AT DEATH—IN YEARS													
			UNDER 5 YEARS		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards	
			0 to 1	1 to 5												
	All Causes .....	5488	1141	705	147	60	100	114	332	443	576	679	730	389	72	
A	Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Measles.....	105	28	72	5	...	...	...	...	...	...	...	...	...	...	
	Scarlet Fever .....	47	2	25	13	4	1	1	1	...	...	...	...	...	...	
	Typhus Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Whooping Cough .....	168	57	103	7	1	...	...	...	...	...	...	...	...	...	
	Diphtheria, Memb: Croup .....	56	4	37	13	1	...	...	1	...	...	...	...	...	...	
	Ill-defined Fever.....	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
	Enteric Fever .....	13	...	...	2	...	...	1	3	4	3	...	...	...	...	
	Influenza .....	61	2	1	3	...	2	1	6	2	9	14	13	6	2	
	Epidemic Diarrhœa .....	115	88	25	...	...	...	...	...	...	...	2	...	...	...	
	Diarrhœa, Dysentery, Simple Cholera.....	24	12	5	...	...	...	...	...	...	...	2	3	2	...	
	Venereal Affections.....	26	21	3	...	...	...	...	1	...	1	...	...	...	...	
	Erysipelas.....	11	2	1	...	...	...	...	1	2	...	2	2	1	...	
	Pyæmia, Septicæmia .....	14	3	...	2	...	1	2	2	1	2	1	...	...	...	
	Puerperal Fever .....	20	...	...	...	...	...	9	8	3	...	...	...	...	...	
	Other Zymotics .....	8	1	1	...	...	1	1	...	1	3	...	...	...	...	
	B and C	Tubercular Periton : Tabes Mes. ....	43	13	14	6	...	2	3	2	...	3	...	...	...	...
		Tubercular Meningitis .....	64	15	35	8	3	1	...	2	...	...	...	...	...	...
		Phthisis .....	384	...	8	10	11	38	39	81	91	66	30	9	1	...
		Tuberculous Diseases (other) ...	50	10	12	8	4	2	1	2	4	4	1	1	1	...
Parasitic Diseases .....		...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Alcoholism .....		26	...	...	...	...	...	...	6	5	4	9	2	...	...	
Rheumatic Fever .....		16	...	...	1	2	2	2	3	1	3	3	...	...	...	
Cancer .....		292	1	1	...	...	1	3	15	49	73	80	55	13	1	
Premature Birth .....		138	138	...	...	...	...	...	...	...	...	...	...	...	...	
Congenital defects .....		48	3	1	...	...	...	...	...	...	...	...	...	...	...	
Epilepsy .....		29	...	...	1	...	3	2	6	5	7	3	2	...	...	
Convulsions .....		69	55	13	1	...	...	...	...	...	...	...	...	...	...	
Nervous System (other) .....		206	13	28	7	4	5	2	17	18	30	39	26	15	2	
Cerebral Hemorrhage, Apoplexy, and Hemiplegia .....		228	2	1	...	...	...	...	6	16	39	46	83	29	6	
Heart and Blood Vessel Diseases		643	4	5	6	4	13	19	40	60	95	131	166	90	10	
D		Croup .....	4	...	3	1	...	...	...	...	...	...	...	...	...	...
		Bronchitis .....	683	108	68	3	...	...	3	4	37	69	134	164	84	9
		Pneumonia .....	590	158	143	20	6	10	6	46	38	45	49	48	18	3
		Respiratory Diseases (other).....	61	4	7	6	...	2	...	2	4	8	14	10	3	1
		Digestive System (other) .....	240	74	12	7	5	4	5	18	28	31	31	19	5	1
	Urinary System (other).....	148	3	6	2	...	2	5	18	26	26	33	21	6	...	
	Generative Organs and Childbirth	44	...	...	...	...	1	4	16	12	6	2	2	1	...	
	Other specified Diseases .....	179	31	26	4	7	5	3	10	10	28	26	21	5	3	
	E	Marasmus and Atrophy.....	227	191	17	1	...	...	...	...	...	...	1	7	8	2
		Old Age .....	183	...	...	...	...	...	...	...	...	...	4	59	92	28
Other Ill-defined Causes .....		6	1	...	...	...	...	...	...	2	1	1	...	1	...	
E	Violence .....	194	56	30	9	8	2	3	10	16	15	19	15	7	4	
	Homicide.....	2	...	...	...	...	...	...	1	1	...	...	...	...	...	
	Suicide .....	21	...	...	...	...	2	...	4	5	5	2	2	1	...	
	Execution.....	1	...	...	...	...	...	...	...	1	...	...	...	...	...	



TABLE D.  
CITY OF MANCHESTER, 1907.—CAUSES OF DEATH IN INFANCY AND  
CHILDHOOD.

CAUSES OF DEATH	UNDER ONE YEAR			Total under One Year	ONE AND UNDER FIVE YEARS				Total under Five Years
	Under 3 months	3-6 months	6-12 months		1-	2-	3-	4-	
All Causes .....	1,349	556	786	2,691	793	300	182	154	4,129
Measles .....	...	6	48	54	92	36	22	15	215
Scarlatina .....	...	1	6	7	11	14	12	18	65
Whooping Cough .....	28	20	73	121	105	38	19	17	309
Diphtheria..... (Memb: Croup)	...	1	10	11	22	18	18	11	89
Fever (various forms) .....	1	...	2	3	...	...	...	1	5
Diarrhœal Diseases .....	58	76	88	222	44	4	4	...	276
Syphilis .....	29	8	2	39	4	...	...	...	41
Tabes Mesenterica and Tuberc. Peritonitis	3	13	16	32	18	14	4	3	79
Hydrocephalus .....	3	10	24	37	32	18	11	7	108
Scrofula (other).....	12	6	12	30	19	15	10	9	81
Premature Birth .....	357	5	2	364	...	...	...	...	366
Teething .....	...	3	26	29	14	1	...	...	41
Convulsions .....	76	27	22	125	19	1	...	...	147
Brain Diseases (other) .....	6	10	20	36	32	13	6	6	97
Lung Diseases .....	160	163	306	629	279	77	54	28	1,068
Atrophy, Marasmus .....	309	98	58	465	29	5	1	1	506
Found Dead in Bed (over- laid)	52	27	4	83	1	...	...	...	84
Suffocation .....	13	...	...	13	...	...	...	...	13
Violence (other forms) .....	5	1	6	12	16	24	11	15	78
Ill-defined Causes.....	5	1	...	6	...	...	...	...	6
Unclassified .....	232	80	61	373	56	22	10	23	481



TABLE E, 1881 TO 1907.—MANCHESTER.—ESTIMATED POPULATIONS. ANNUAL RATES OF MARRIAGES, BIRTHS, AND DEATHS (*a*) from all causes, and (*b*) from specified causes; also the percentages to total deaths of Inquest Cases, and of Deaths in Public Institutions; also the quinquennial averages from 1871–1906, with the average for same period.

YEARS	Estimated Populations — (Mean)	Persons Married	ANNUAL RATES PER 1,000 PERSONS LIVING												PERCENTAGES TO TOTAL DEATHS		YEARS		
			Births	Deaths (All Causes)	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Typhus Fever	Enteric Fever	Simple Continued Fever	Diarrhoea and Dysentery	English Cholera	Violence	Inquest Cases		Deaths in Public Institutions	
Quinquennial Averages	1871-1875	477,344	24.6	38.9	28.3	0.26	0.64	1.08	0.08	0.78	0.14	0.43	0.21	1.92	0.03	0.94	7.2	13.4	1871-1875
	1876-1880	509,802	18.6	38.7	26.2	0.24	0.53	1.07	0.13	0.84	0.08	0.29	0.11	1.22	0.04	0.89	7.5	14.3	1876-1880
	1881-1885	542,746	17.9	35.1	23.6	0.04	0.71	0.48	0.10	0.68	0.05	0.20	0.03	0.96	0.03	0.72	7.0	15.9	1881-1885
	1886-1890	575,630	16.6	33.4	24.6	0.02	0.83	0.50	0.32	0.54	0.02	0.30	0.01	1.06	0.02	0.78	6.9	17.7	1886-1890
	1891-1895	517,801	16.9	33.2	23.6	0.03	0.62	0.26	0.27	0.01	0.00	0.24	0.01	1.14	0.05	0.77	7.1	19.2	1891-1895
	1896-1900	539,599	18.2	32.5	22.7	...	0.89	0.20	0.13	0.53	0.00	0.18	0.01	1.65	0.04	0.73	7.1	20.2	1896-1900
1901-1905	554,355	17.4	30.9	20.1	0.01	0.55	0.19	0.22	0.41	0.00	0.13	0.00	1.15		0.72	7.1	24.4	1901-1905	
Ave. 1871-1905 35 yrs.	527,154	18.8	35.3	24.8	0.10	0.70	0.60	0.17	0.67	0.05	0.27	0.06	1.32	0.03	0.80	7.1	16.8	1871-1905 Ave. 35 yrs.	
1881	530,051	17.8	35.9	22.8	0.03	0.29	0.34	0.09	0.71	0.03	0.17	0.06	0.73	0.02	0.84	8.1	15.9	1881	
1882	536,324	18.8	35.7	24.0	0.05	0.89	0.34	0.11	0.87	0.10	0.25	0.04	1.00	0.03	0.67	7.2	14.5	1882	
1883	542,671	17.8	34.9	24.4	0.01	0.71	0.81	0.11	0.62	0.05	0.20	0.03	0.95	0.03	0.73	7.0	15.5	1883	
1884*	549,093	18.0	34.4	23.4	0.01	0.57	0.74	0.08	0.49	0.03	0.19	0.03	1.46	0.05	0.65	6.2	17.3	1884*	
1885	555,591	17.0	34.8	23.6	0.08	1.08	0.17	0.10	0.71	0.04	0.17	0.01	0.64	0.02	0.69	6.4	16.4	1885	
1886	562,166	16.4	34.7	24.1	0.00	0.27	0.41	0.15	0.57	0.03	0.29	0.01	1.34	0.04	0.71	7.2	17.0	1886	
1887	568,819	16.6	33.9	25.4	0.01	1.54	0.63	0.23	0.50	0.02	0.31	0.01	1.19	0.02	0.77	6.9	16.1	1887	
1888	575,550	16.0	33.3	23.3	0.07	0.27	0.42	0.36	0.79	0.02	0.33	0.02	0.71	0.01	0.74	6.7	18.3	1888	
1889	582,362	17.0	33.1	24.2	0.00	1.22	0.45	0.51	0.45	0.01	0.31	0.01	1.00	0.03	0.89	6.5	18.2	1889	
1890*	589,253	17.0	31.8	26.2	...	0.83	0.60	0.36	0.37	0.01	0.27	0.02	1.04	0.02	0.79	7.0	19.1	1890*	

TABLE E—Continued

YEARS	Estimated Populations — (Mean)	Persons Married	ANNUAL RATES PER 1,000 PERSONS LIVING												PERCENTAGES TO TOTAL DEATHS		YEARS	
			Births	Deaths (All Causes)	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Typhus Fever	Enteric Fever	Simple Continued Fever	Diarrhoea and Dysentery	English Cholera	Violence	Inquest Cases		Deaths in Public Institutions
1891†	† 508,673	17.2	33.8	26.0	...	0.43	0.22	0.25	1.02	0.01	0.37	0.01	0.81	0.04	0.79	6.8	18.4	1891†
1892†	† 513,196	17.2	33.4	23.2	0.00	0.72	0.27	0.25	0.72	0.00	0.24	0.01	0.79	0.02	0.77	7.4	18.2	1892†
1893†	† 517,760	16.0	33.4	24.3	0.09	0.57	0.27	0.35	0.46	0.00	0.25	0.01	1.75	0.10	0.76	6.9	18.7	1893†
1894†	† 522,365	16.8	31.8	19.8	0.04	0.42	0.22	0.29	0.55	...	0.17	0.01	0.70	0.02	0.75	7.5	21.3	1894†
1895†	† 527,010	17.4	33.4	24.5	0.00	0.96	0.33	0.21	0.47	...	0.18	0.01	1.66	0.06	0.80	6.9	19.2	1895†
1896†*	† 531,697	18.3	32.8	22.0	...	1.05	0.37	0.15	0.66	0.00	0.22	0.01	1.04	0.02	0.71	7.4	19.7	1896†*
1897†	† 536,426	17.8	32.9	22.4	...	1.17	0.23	0.08	0.56	0.00	0.18	0.00	1.74	0.06	0.68	6.6	20.0	1897†
1898†	† 541,296	18.3	32.3	21.2	...	0.50	0.12	0.09	0.31	...	0.22	0.01	1.96	0.06	0.69	7.0	19.5	1898†
1899†	† 546,010	18.4	32.2	23.9	...	1.28	0.08	0.16	0.42	0.00	0.13	0.01	2.02	0.03	0.78	7.0	19.7	1899†
1900†	† 542,566	18.0	32.4	23.8	...	0.47	0.19	0.19	0.68	...	0.14	0.01	1.49	0.03	0.78	7.4	21.9	1900†
1901†	† 546,408	17.6	28.7	21.6	...	0.53	0.23	0.24	0.41	0.02	0.14	0.00	1.86	0.78	0.78	7.9	23.2	1901†
1902†*	† 550,355	18.1	33.0	20.0	...	0.44	0.27	0.22	0.44	...	0.12	...	0.54	0.73	0.73	7.6	23.8	1902†*
1903†	† 554,331	17.8	31.7	19.5	0.04	0.62	0.17	0.25	0.38	...	0.17	0.00	0.91	0.72	0.72	7.0	25.3	1903†
1904†	† 558,335	16.5	31.1	20.9	0.02	0.76	0.15	0.18	0.50	...	0.12	0.00	1.36	0.73	0.73	5.9	24.6	1904†
1905§	† 631,933	17.0	29.0	17.8	...	0.37	0.12	0.20	0.31	...	0.09	0.01	1.15	0.59	0.59	6.7	24.1	1905§
1905	562,346	...	30.1	18.7	...	0.40	0.13	0.22	0.34	...	0.09	0.01	1.27	0.65	0.65	6.9	24.9	1905
1906§	637,520	18.0	28.9	19.0	...	0.75	0.17	0.19	0.30	...	0.13	0.00	1.54	0.62	0.62	7.3	25.4	1906§
1906	566,409	...	30.1	19.9	...	0.83	0.19	0.20	0.33	...	0.14	0.00	1.66	0.66	0.66	7.3	26.2	1906
1907§	643,158	18.3	28.4	17.9	...	0.36	0.16	0.16	0.49	...	0.06	0.00	0.45	0.67	0.67	8.0	26.5	1907§
1907	570,506	...	29.4	18.7	...	0.39	0.18	0.18	0.52	...	0.06	0.00	0.50	0.71	0.71	8.1	27.4	1907

\* The facts for these years are for 53 instead of 52 weeks; corrections have, therefore, been made in calculating the rates.

† The populations and rates for the years subsequent to 1890, except the marriage rates, relate to the City of Manchester as enlarged by the Act of that year. The facts and rates for previous years are those for the three Unions of Manchester, Chorlton, and Prestwich, which have been taken to approximately represent "Manchester."

‡ These figures include a proportion of the inmates of certain Extra-municipal Institutions which receive patients from the City of Manchester, and are therefore in excess of the estimates of the Registrar-General.

§ Includes the newly amalgamated districts of Moss Side and Withington. || Exclusive of Moss Side and Withington.

NOTE.—The population for 1900 is based on the Census figures of 1891 and 1901.



TABLE F, 1881 TO 1907.—MANCHESTER.  
ANNUAL RATES OF MORTALITY FROM CERTAIN CAUSES OF DEATH.

YEAR	ANNUAL RATES PER 1,000 PERSONS LIVING										RATES PER 1,000 BIRTHS	
	Cancer	Tuber: Peritonitis Tubes Mes:	Phthisis	Other Tuber: Diseases	Diseases of Nervous System	Diseases of Circulatory System	Diseases of Respiratory System	Diseases of Digestive System	Diseases of Urinary System	Diseases of Generative System	Puerperal Fever	Childbirth
881-1885	0.50	0.35	2.42	0.57	3.28	1.37	5.41	1.23	0.48	0.08	3.03	1.99
886-1890	0.64	0.36	2.24	0.59	3.09	1.73	5.76	1.23	0.61	0.08	3.22	2.13
891-1895	0.62	0.22	2.09	0.75	1.74	2.53	5.56	1.07	0.52	0.07	2.75	3.42
896-1900	0.73	0.19	2.04	0.63	1.32	2.54	5.03	1.04	0.49	0.09	1.55	1.51
901-1905	0.80	0.16	1.94	0.55	1.17	2.56	4.29	0.95	0.49	0.08	1.21	1.76
881-1905	0.66	0.26	2.15	0.62	2.12	2.15	5.21	1.10	0.52	0.08	2.35	2.16
1881	0.48	0.28	2.46	0.52	3.33	1.19	5.57	1.24	0.39	0.07	3.15	1.37
1882	0.44	0.40	2.41	0.61	3.35	1.34	5.33	1.19	0.45	0.08	3.92	1.62
1883	0.54	0.34	2.54	0.59	3.32	1.33	5.66	1.20	0.50	0.06	2.27	1.58
* 1884	0.51	0.39	2.34	0.56	3.27	1.44	4.88	1.23	0.59	0.10	2.81	2.55
1885	0.51	0.36	2.34	0.56	3.12	1.53	5.59	1.28	0.49	0.08	3.05	2.84
1886	0.56	0.43	2.44	0.59	3.30	1.53	5.43	1.26	0.57	0.08	2.67	1.85
1887	0.62	0.39	2.19	0.53	3.17	1.66	5.72	1.23	0.53	0.08	3.58	1.35
1888	0.65	0.31	2.14	0.62	3.19	1.72	5.31	1.16	0.62	0.10	4.12	1.77
1889	0.70	0.36	2.12	0.59	2.94	1.79	5.06	1.28	0.64	0.08	3.06	1.87
* 1890	0.65	0.33	2.33	0.62	2.87	1.93	7.28	1.22	0.66	0.08	2.68	3.89
1891	0.63	0.25	2.20	0.78	2.30	2.69	6.77	1.03	0.55	0.07	3.08	4.01
1892	0.61	0.21	2.05	0.75	1.70	2.59	5.44	1.14	0.53	0.05	3.79	4.54
1893	0.59	0.26	2.05	0.76	1.70	2.48	5.53	1.20	0.53	0.07	3.70	3.94
1894	0.66	0.18	1.97	0.67	1.48	2.31	4.35	0.96	0.49	0.04	1.93	2.77
1895	0.63	0.22	2.16	0.77	1.51	2.60	5.73	1.04	0.49	0.11	1.25	1.82
* 1896	0.66	0.13	2.00	0.60	1.33	2.53	5.19	1.04	0.46	0.11	0.96	1.47
1897	0.74	0.22	2.12	0.67	1.35	2.45	4.51	1.03	0.51	0.10	2.10	1.36
1898	0.73	0.19	1.95	0.67	1.22	2.15	4.27	1.00	0.54	0.09	1.72	1.54
1899	0.75	0.24	2.05	0.61	1.34	2.73	5.47	0.99	0.47	0.10	1.37	1.54
1900	0.76	0.17	2.09	0.60	1.37	2.82	5.78	1.15	0.48	0.05	1.59	1.65
1901	0.78	0.20	2.09	0.83	1.22	2.55	4.48	1.00	0.49	0.03	2.17	1.72
* 1902	0.79	0.16	2.08	0.55	1.13	2.61	4.71	0.93	0.58	0.11	0.94	1.65
1903	0.76	0.18	1.85	0.58	1.25	2.46	3.95	0.99	0.46	0.08	0.80	1.59
1904	0.81	0.15	1.98	0.54	1.17	2.71	4.38	1.02	0.50	0.09	1.04	2.13
1905	0.86	0.12	1.56	0.48	1.06	2.47	3.70	0.81	0.41	0.09	1.09	1.80
1905	0.86	0.13	1.68	0.50	1.10	2.49	3.94	0.83	0.42	0.10	1.12	1.71
1906	0.88	0.14	1.71	0.49	1.06	2.68	3.52	0.91	0.47	0.07	1.63	1.63
1906	0.89	0.15	1.81	0.52	1.09	2.69	3.75	0.95	0.46	0.08	1.76	1.70
1907	0.77	0.15	1.70	0.41	1.01	2.53	4.30	0.80	0.56	0.07	1.09	1.26
1907	0.78	0.16	1.80	0.44	1.04	2.56	4.58	0.83	0.55	0.07	1.07	1.19

\* The facts for these years are for 53 instead of 52 weeks; corrections have therefore been made calculating the rates.

† The rates of mortality for the years subsequent to 1890 refer to the City of Manchester as urged by the Act of that year. The rates for 1890 and for previous years are those for the three Unions Manchester, Chorlton, and Prestwich, which have been taken to approximately represent "Manchester."

‡ Includes the newly amalgamated districts of Moss Side and Withington.

§ Exclusive of Moss Side and Withington.



TABLE G, 1907.—POPULATION, AREA, DENSITY. TOTAL BIRTHS AND DEATHS,  
WITH BIRTH AND DEATH RATES.

[INSTITUTION POPULATIONS, BIRTHS AND DEATHS, DISTRIBUTED.]

STATISTICAL DIVISIONS	* Estimated Population	Area in Acres	Persons to an Acre	BIRTHS		DEATHS		Natu Rate Incre
				Total	Rate per 1,000	Total	Rate per 1,000	
City of Manchester.....	643,158	19,059	33	18,251	28·38	11,508	17·89	10·2
I. Manchester Township..	126,662	1,646	77	3,992	31·53	3,178	25·10	6·2
II. North Manchester .....	192,312	7,321	26	5,455	28·37	2,834	14·74	13·6
III. South Manchester .....	324,224	10,092	32	8,804	27·15	5,496	16·95	10·2
I. { Ancoats .....	43,261	400	108	1,476	34·12	1,096	25·33	8·
{ Central .....	25,687	748	34	680	26·47	684	26·63	—0·
{ St. George's.....	57,674	498	116	1,836	31·83	1,398	24·24	7·
II. { Cheetham .....	41,700	919	45	1,194	28·63	483	11·58	17·
{ Crumpsall .....	9,369	733	13	190	20·28	115	12·27	8·
{ Blackley .....	9,715	1,840	5	271	27·90	150	15·44	12·
{ Harpurhey .....	22,131	193	115	511	23·09	269	12·15	10·
{ Moston .....	19,334	1,297	15	495	25·60	244	12·62	12·
{ Newton Heath .....	38,851	1,350	29	1,132	29·14	706	18·17	10·
{ Bradford .....	25,185	288	87	802	31·84	471	18·70	13·
{ Beswick .....	12,487	96	130	473	37·88	229	18·34	19·
{ Clayton .....	13,540	605	22	387	28·58	167	12·33	16·
III. { Ardwick .....	44,797	509	88	1,326	29·60	741	16·54	13·
{ Openshaw .....	28,824	581	50	977	33·90	527	18·28	15·
{ West Gorton .....	31,926	318	100	879	27·53	512	16·04	11·
{ Rusholme and Kirk. ...	26,684	1,412	19	831	31·14	431	16·15	14·
{ Chorlton-upon-Medlock	55,988	646	87	1,245	22·24	1,017	18·16	4·
{ Hulme.....	63,353	477	133	2,046	32·30	1,450	22·89	9·
{ Moss Side .....	28,318	421	67	586	20·69	395	13·95	6·
{ Withington .....	44,334	5,728	8	914	20·62	423	9·54	11·

\* NOTE.—Calculated on the Census of 1891 and 1901.

TABLE H, 1907.

BIRTHS REGISTERED IN THE CITY OF MANCHESTER, IN ITS MAIN DIVISIONS AND IN DISTRICTS; DISTINGUISHING LEGITIMATE AND ILLEGITIMATE BIRTHS; ALSO THE PROPORTION OF MORTALITY AMONG INFANTS OF BOTH CLASSES UNDER ONE YEAR OF AGE.

STATISTICAL DIVISIONS	BIRTHS		Percentage of Illegitimate Births to Total Births	DEATHS UNDER 1 YEAR		PROPORTION OF DEATHS UNDER 1 YEAR PER 1,000 BIRTHS		
	Total	Illegitimate		Total	Of Illegitimate Children	Total	Legitimate	Illegitimate
City of Manchester.....	18,251	681	3·7	2,691	203	147	142	298
I. Manchester Township	3,992	163	4·1	737	63	185	176	387
II. North Manchester.....	5,455	138	2·5	679	34	124	121	246
II. South Manchester .....	8,804	380	4·3	1,275	106	145	139	279
I. { Ancoats .....	1,476	50	3·4	277	19	188	181	380
{ Central .....	680	35	5·1	139	16	204	191	457
{ St. George's .....	1,836	78	4·2	321	28	175	167	359
II. { Cheetham .....	1,194	29	2·4	109	6	91	88	207
{ Crumpsall .....	190	13	6·8	21	...	108	119	...
{ Blackley.....	271	8	3·0	25	3	92	84	375
{ Harpurhey.....	511	11	2·2	55	4	108	102	364
{ Moston .....	495	9	1·8	61	3	123	119	333
{ Newton Heath .....	1,132	29	2·6	168	12	148	141	414
{ Bradford .....	802	15	1·9	112	4	140	137	267
{ Beswick .....	473	15	3·2	79	2	167	168	133
{ Clayton .....	387	9	2·3	49	...	127	130	...
II. { Ardwick .....	1,326	46	3·5	179	18	135	126	391
{ Openshaw .....	977	24	2·5	149	9	153	147	375
{ Gorton (West) .....	879	26	3·0	151	7	172	169	269
{ Rusholme and Kirk.	831	23	2·8	83	3	99	99	130
{ Chorlton-on-Medlock	1,245	91	7·3	210	29	169	157	319
{ Hulme .....	2,046	103	5·0	366	27	179	174	262
{ Moss Side .....	586	36	6·1	54	6	92	87	167
{ Withington .....	914	31	3·4	83	7	91	86	226

TABLE J, 1907.

INFANTILE MORTALITY IN THE CITY, AND ITS THREE MAIN  
DIVISIONS.

DEATH-RATES UNDER ONE YEAR PER 1,000 BIRTHS.

CAUSES OF DEATH	City of Manchester	Manchester Township	North Manchester	South Manchester
All Causes .....	147·44	184·62	124·47	144·82
Measles .....	2·96	2·76	3·12	2·95
Whooping Cough .....	6·63	6·26	4·95	7·84
Other Com: Infectious Diseases†	1·04	2·00	1·28	0·45
Diarrhœal Diseases .....	12·16	18·04	10·27	10·68
Tubercular Diseases‡ .....	5·42	7·27	2·38	6·47
Convulsions .....	6·85	7·51	5·68	7·27
Other Nervous Diseases§ .....	1·97	2·26	2·38	1·59
Lung Diseases .....	34·46	45·09	33·00	30·55
Premature Birth.....	19·94	17·03	18·15	22·38
Atrophy, &c.    .....	25·48	40·33	19·62	22·38
Suffocation .....	0·71	1·25	0·55	0·57
Found dead in bed .....	4·55	8·02	1·28	5·00

† These are Smallpox, Scarlatina, Diphtheria, Membranous Croup, and various forms of “Fever” including the chief forms of Typhus and Typhoid.

‡ These are Phthisis, Tubercular Meningitis (Hydrocephalus), Tabes Mesenterica, and General Tuberculosis (Scrofula).

§ These are Meningitis, and other diseases of the Brain and Spinal Cord.

|| These are such ill-defined causes as Atrophy, Marasmus, Debility, Inanition, &c.



TABLE K, 1907.—CITY OF MANCHESTER. ANNUAL RATES OF MORTALITY PER 1,000 PERSONS LIVING AT ALL AGES, IN THE CITY OF MANCHESTER AND IN ITS STATISTICAL DIVISIONS, FROM CERTAIN DISEASES AND GROUPS OF DISEASES.

CAUSES OF DEATH	City of Manchester	City—exclusive of Moss Side and Withington	Manchester Township	North Manchester	South Manchester	South—exclu- sive of Moss Side and Withington	City of Manchester exclusive of Withington and Moss Side Average of 10 years 1897-1906
All Causes .....	17·89	18·74	25·10	14·74	16·95	18·60	21·19
Smallpox .....	...	...	...	...	...	...	0·01
Measles .....	0·36	0·39	0·48	0·34	0·31	0·38	0·70
Scarlet Fever .....	0·16	0·18	0·20	0·22	0·11	0·14	0·18
Typhus Fever .....	...	...	...	...	...	...	0·00
Influenza .....	0·17	0·17	0·12	0·17	0·19	0·19	0·21
Whooping Cough .....	0·49	0·52	0·51	0·35	0·56	0·67	0·44
Diphtheria and Membr: Croup.	0·16	0·18	0·21	0·19	0·13	0·16	0·18
Un-defined Fever.....	0·00	0·00	...	0·01	0·00	0·00	0·00
Enteric Fever .....	0·06	0·06	0·09	0·05	0·05	0·04	0·15
Diarrhœal Diseases .....	0·45	0·50	0·77	0·40	0·36	0·44	1·50
Erysipelas .....	0·03	0·03	0·07	0·02	0·02	0·02	0·05
Erysipelas .....	0·03	0·03	0·06	0·03	0·02	0·02	0·05
Pyæmia, Septicæmia .....	0·04	0·05	0·07	0·05	0·03	0·03	0·03
Phthisis (Tuberc: Pulmon:) ...	1·70	1·80	3·09	1·16	1·47	1·64	1·97
Tubercular Meningitis.....	0·21	0·23	0·26	0·12	0·25	0·29	0·28
Tuberc: Periton: Tabes Mes:..	0·15	0·16	0·25	0·10	0·14	0·16	0·18
Tuberculous Dis: (other) .....	0·20	0·21	0·25	0·14	0·23	0·25	0·33
Alcoholism .....	0·09	0·10	0·23	0·03	0·08	0·09	0·13
Cancer .....	0·77	0·78	0·96	0·57	0·82	0·84	0·79
Rheumatic Fever .....	0·05	0·05	0·05	0·05	0·06	0·06	0·07
Immature Birth .....	0·57	0·60	0·54	0·51	0·61	0·70	0·66
Nervous Diseases .....	1·01	1·04	1·33	0·84	0·98	1·06	1·22
Heart and Blood Vessels Diseases	2·53	2·56	3·05	2·08	2·59	2·67	2·57
Bronchitis .....	2·02	2·16	3·29	1·67	1·73	1·96	2·02
Pneumonia .....	2·06	2·19	3·17	1·65	1·87	2·11	2·25
Respiratory Diseases (other) ...	0·23	0·24	0·23	0·21	0·23	0·26	0·26
Digestive Organs (Diseases of)	0·80	0·83	1·00	0·69	0·80	0·85	0·99
Urinary Organs (Diseases of)	0·56	0·55	0·54	0·42	0·65	0·65	0·49
Old Age .....	0·43	0·44	0·58	0·39	0·39	0·41	0·42

TABLE I., 1907.

MANCHESTER.—CERTIFICATION OF THE CAUSES OF DEATH IN THE MAIN  
DIVISIONS AND IN DISTRICTS.

STATISTICAL DIVISIONS.	Total Deaths	Certified by		Not Certified	Proportion per cent. of Deaths		
		Registered Medical Practitioners	Coroner		Certified by		Not Certified
					Regist'd Medical Prac- titioners	Coroner	
City of Manchester .....	11,508	10,482	920	106	91·1	8·0	0·9
I. Manchester Township ...	3,178	2,841	300	37	89·4	9·4	1·2
II. North Manchester .....	2,834	2,615	195	24	92·3	6·9	0·8
III. South Manchester .....	5,496	5,026	425	45	91·5	7·7	0·8
I. { Ancoats .....	1,096	991	93	12	90·4	8·5	1·1
{ Central .....	684	597	76	11	87·3	11·1	1·6
{ St. George's .....	1,398	1,253	131	14	89·6	9·4	1·0
II. { Cheetham .....	483	446	30	7	92·3	6·2	1·5
{ Crumpsall .. .....	115	108	6	1	93·9	5·2	0·9
{ Blackley .....	150	134	13	3	89·3	8·7	2·0
{ Harpurhey .....	269	257	10	2	95·6	3·7	0·7
{ Moston .....	244	229	12	3	93·9	4·9	1·2
{ Newton Heath .....	706	649	54	3	91·9	7·7	0·4
{ Bradford .....	471	428	38	5	90·8	8·1	1·1
{ Beswick .....	229	214	15	...	93·4	6·6	...
{ Clayton .....	167	150	17	...	89·8	10·2	...
III. { Ardwick .....	741	681	55	5	91·9	7·4	0·7
{ Openshaw .....	527	483	40	4	91·6	7·6	0·8
{ Gorton (West) .....	512	472	34	6	92·2	6·6	1·2
{ Rusholme and Kirk. ...	431	401	27	3	93·0	6·3	0·7
{ Chorlton-upon-Medlock	1,017	922	90	5	90·6	8·9	0·5
{ Hulme .....	1,450	1,300	130	20	89·6	9·0	1·4
{ Moss Side .....	395	371	23	1	93·9	5·8	0·3
{ Withington .....	423	396	26	1	93·5	6·1	2·4

TABLE M, 1907—CITY OF MANCHESTER.—ANNUAL RATES OF MORTALITY AT SIX GROUPS OF AGES, \* PER 1,000 LIVING AT

THOSE AGE GROUPS, FROM CERTAIN PREVALENT DISEASES, AND GROUPS OF DISEASES.

CAUSES OF DEATH	Under 5 Years	5 to 14 Years	15 to 24 Years	25 to 44 Years	45 to 64 Years	65 Years and upwards
All Causes.....	56·21	3·04	3·39	8·64	30·55	105·06
Smallpox.....	...	...	...	...	...	...
Measles .....	2·99	0·07	...	...	0·01	...
Scarlatina .....	0·85	0·26	0·02	0·05	...	...
Diphtheria, Memb. Croup.....	1·09	0·19	...	0·01	...	...
Whooping Cough.....	4·09	0·11	...	...	...	...
{ Typhus .....	...	...	...	...	...	...
Fever .....	0·01	0·03	0·05	0·10	0·08	...
{ Enteric.....	0·01	...	...	0·01	...	...
{ Continued.....						
Diarrhoeal Diseases.....	3·74	0·02	...	0·01	0·07	0·31
Tubercular Diseases .....	3·53	0·75	1·30	2·67	4·02	1·99
Malignant Disease.....	0·03	0·01	0·05	0·41	3·15	6·13
{ Nervous System.....	3·25	0·17	0·14	0·62	1·78	4·34
{ Heart and Blood Vessels.....	0·25	0·16	0·44	1·10	7·00	34·24
Diseases of ... { Respiratory System.....	14·56	0·49	0·38	1·58	7·90	28·26
{ Digestive System.....	2·92	0·15	0·26	0·42	1·35	2·30
{ Urinary System.....	0·19	0·08	0·11	0·41	1·62	4·65
Other Diseases.....	18·70	0·54	0·64	1·30	3·57	22·84

\* For death-rates at all ages, see Table K.



TABLE N, 1907.—PARTICULARS AS TO MANCHESTER PATIENTS UNDER TREATMENT IN THE SEVERAL FEVER HOSPITALS DURING THE YEAR ; ALSO OF PATIENTS FROM OUTSIDE DISTRICTS SENT TO MONSALL AND CLAYTON DURING THE SAME PERIOD.

DISEASE	HOSPITAL	In Hospital commence- ment of year	Admitted	Discharged	Died	Remaining in Hospital close of year
SMALLPOX .....	Clayton Hospital .....	...	5	5	...	...
	Total .....	...	5	5	...	...
SCARLET FEVER ...	Monsall .....	238	1,520	1,420	71	267
	Baguley Sanatorium...	39	301	286	2	52
	Other Hospitals.....	...	...	...	...	...
	Total .....	277	1,821	1,706	73	319
DIPHTHERIA .....	Monsall .....	29	207	177	37	22
	Baguley Sanatorium...	4	10	12	...	2
	Other Hospitals .....	...	...	...	...	...
	Total .....	33	217	189	37	24
ENTERIC FEVER...	Monsall .....	34	140	124	16	34
	Baguley Sanatorium...	...	...	...	...	...
	Other Hospitals .....	2	26	13	7	8
	Total .....	36	166	137	23	42
TYPHUS FEVER ...	Monsall .....	...	...	...	...	...
	Baguley Sanatorium...	...	...	...	...	...
	Other Hospitals .....	...	...	...	...	...
	Total .....	...	...	...	...	..
OTHER ACUTE DISEASES .....	Monsall .....	16	258	219	35	20
	Baguley Sanatorium...	...	...	...	...	...
	Total .....	16	258	219	35	20
ALL DISEASES.....		362	2,467	2,256	168	405

PATIENTS SENT TO MONSALL OR CLAYTON, FROM DISTRICTS OUTSIDE THE CITY DURING THE YEAR 1907.

DISEASE	Northern Hospital	Swinton Schools	Royal Infirmary	Pendlebury Hospital	Barnes' Convales. Hospital	Jewish Hospital	Outside Districts
Smallpox .....	...	...	...	...	...	...	...
Scarlatina .....	...	4	1	30	1	...	...
Diphtheria .....	1	...	...	2	...	...	...
Enteric Fever .....	...	...	1	...	...	...	6
Other Diseases .....	...	...	...	2	1	...	...

Total, 49.

## TOWNSHIPS

	Ancoats	Central	St. George's	Cheetham	Crumpsall	Blackley	Harpurhey	Moston	Newton	Bradford	Beswick	Clayton	Ardwick	Openshaw	Gorton (West)	Rusholme and Kirkmanshulme	Chorlton-upon- Medlock	Hulme	Moss Side (Incor- porated Nov. 1904)	Withington	Didsbury	Chorlton-cum- Hardy	TOTALS
Complaints to Sanitary Superintendent ...	330	521	359	502	20	5	10	6	119	53	13	23	149	15	20	110	360	424	187	...	...	...	3,226
Dwelling-houses .....	6142	3666	6476	3861	775	955	1073	1669	3817	2232	1482	1150	3649	2424	2027	1839	5612	6620	3703	...	...	...	59,172
Newly-infected Dwelling-houses .....	291	128	375	260	84	90	138	155	255	141	83	85	252	230	224	166	234	286	120	...	...	...	3,597
Cellars.....	...	1	15	158	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	175
Schools .....	28	...	5	2	...	2	1	2	1	2	1	...	...	...	1	...	1	2	...	...	...	...	48
Factories and Workshops .....	35	...	54	82	1	4	5	...	8	22	3	2	13	1	1	2	4	17	4	...	...	...	258
Lodging-houses .....	577	1465	1511	737	...	...	2	...	15	1	7	...	37	...	...	17	216	630	...	...	...	...	5,215
Offensive Trades .....	15	195	206	9	...	4	3	1	180	39	9	59	1	2	2	2	26	...	...	...	...	...	753
Dairies and Milkshops.....	113	590	414	333	58	91	150	146	277	334	17	117	242	291	260	265	300	98	176	...	...	...	4,272
Ice Cream Manufacturers .....	645	45	135	12	2	11	12	7	21	4	2	4	13	34	28	16	9	97	6	...	...	...	1,103
Bakehouses .....	74	246	112	331	8	35	96	90	84	63	23	46	58	75	55	112	285	219	215	...	...	...	2,227
Canal Boats .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,850
Slaughter-houses .....	...	12	2	...	...	...	...	...	12	...	...	...	...	...	4	5	...	...	1	...	...	...	36
Tips for Refuse.....	...	...	1	5	...	...	4	75	...	...	...	1	...	...	...	...	...	...	4	...	...	...	90
Miscellaneous Inspections .....	256	1696	934	159	54	33	26	168	298	198	173	154	457	118	75	387	968	1078	168	...	...	...	7,400
Factories and Workshops by Shop Hours, &c., Inspectors.....	662	5133	1168	2374	24	21	167	85	318	121	32	69	451	248	273	327	1567	1034	423	...	...	...	14,497
Shops by Shop Hours, &c., Inspectors	222	1154	254	1054	21	67	89	6	177	200	56	30	219	155	140	216	993	430	154	...	...	...	5,637
Infected Rooms Disinfected .....	912	450	719	483	70	225	374	440	980	522	307	126	1212	795	1053	266	421	1218	4	...	...	...	10,377
Infected Dwellings Re-inspected .....	997	347	671	613	123	186	332	302	836	371	529	440	403	438	391	427	513	440	168	...	...	...	8,527
Drains Tested by Water .....	462	383	871	505	395	379	279	336	589	511	221	91	419	552	1377	308	881	965	274	...	...	...	9,798
Smoke { Observations made .....	43	46	19	23	9	23	1	8	68	37	2	37	25	71	18	11	28	34	10	...	...	...	545
Abatement { Proceedings before Magistrates	19	9	8	8	2	12	...	2	31	9	2	14	10	56	3	2	7	10	5	...	...	...	213
FoodAdul- { Samples Collected for Analysis	244	324	171	111	30	19	46	31	80	76	27	20	31	45	67	104	279	447	251	101	120	91	*2,719
teration { Proceedings before Magistrates	16	28	3	2	...	...	8	...	5	...	1	...	...	...	...	...	7	23	10	5	10	3	121
Asphits reported to Cleansing Department for emptying .....	11	...	...	1	52	17	28	68	30	4	...	60	8	...	84	36	4	3	128	...	...	...	534
Receptacles reported to Cleansing Depart- ment for emptying.....	51	85	36	74	2	2	2	3	10	6	70	1	7	4	15	...	60	18	1	...	...	...	447
Notices issued for Abatement of Nuisances, 1077	698	1104	994	192	248	319	321	735	345	345	227	206	455	318	395	480	844	1176	203	4	...	...	10,341
Letters written for Abatement of Nuisances	80	44	95	114	4	2	4	5	25	12	5	1	15	9	12	9	79	164	2	...	...	...	681
Reports made to Medical Officer of Health	1	7	112	...	...	...	...	...	...	8	...	1	3	...	...	2	1	1	5	...	...	...	141
Legal proceedings taken .....	32	35	19	34	1	8	2	...	6	1	1	1	4	4	2	4	22	32	4	...	...	...	†216
Total Nuisances abated .....	904	529	966	837	106	129	252	237	583	267	153	128	525	247	319	231	670	1132	185	...	...	...	8,400
† Number of Cottages under Five Rooms....	7435	4964	9037	729	522	923	688	367	4409	2621	1285	402	4552	3510	3221	826	3805	8167	268	909	...	...	...

\* 4 Samples procured from Outside the City.

† 4 cases Infringement of Canal Boats Acts.

† Census 1901.





## APPENDIX.

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The Midwives Supervising Committee present, for the information of the City Council, the following reports of their officials of the operations carried on in Manchester during 1907 under the Midwives Act, 1902 :—

### STATEMENT BY DR. NIVEN, MEDICAL OFFICER OF HEALTH.

The Medical Officer of Health begs to present to the Midwives Supervising Committee reports by their Executive Officer, Dr. Margaret Merry Smith, and a statement by Dr. A. K. Gordon of the work done by him in connection with cases of Puerperal Fever.

There were during the year 1907, 11 meetings of the Committee and 10 meetings of the Medical Sub-Committee. Although the general principles governing the work are now well established, the details require no less consideration by the Committee than formerly.

They are fully described in the report of the Executive Officer. Special attention is drawn to the excellent work done by Dr. Merry Smith in the instruction which she has given to midwives, and the good attendance at her demonstrations is the best proof that the midwives fully appreciate the value of her teaching. The disciplinary work has not required to be quite so much in evidence as in the preceding year, but that is because a higher standard has been attained.

Dr. Merry Smith rightly lays much stress on the welding of the duties of the midwife and health visitor which has been going on—a process which has directed attention to the great need of extension of the staff of health visitors to cover fresh areas.

Excellent and arduous as the work of supervision has been, it does not, however, cover the field. The investigation of still-births offers a field of useful work which has not yet been cultivated. Inspection in connection with cases in which a midwife has advised the calling in of medical aid other than Puerperal Fever cannot at present be undertaken. Especially in connection with eye cases such visits would be of value, but also in other circumstances. More supervision is needed of the actual conduct of labour by midwives.

During the year 1907 the Midwives Supervising Committee gave much attention to an application from St. Mary's Hospitals for pecuniary assistance, on the ground that, were it not for the work of the hospital, expense would have to be incurred by the public which is now saved. They finally decided that such an application should be made to the City Council rather than to a particular Committee.

During the year the new rules of the Central Midwives Board again came under consideration, and the Committee made some further suggestions on the draft revised rules. They objected to the insertion of the word "serious" before "tear of the perineum," as in their view all tears of the perineum are attended with risk of sepsis.

It will be remembered that the Committee laid special stress on their recommendation that midwives should be required, under the rules, at every visit to take the temperature of the lying-in woman, and to register the same in a book, to be open to inspection by their Executive Officer.

The following letter was addressed by the Medical Officer of Health to the Lord President of the Privy Council, urging that such requirement should be incorporated in the new rules:—

Public Health Office,

Town Hall, Manchester,

24th April, 1907.

The Right Honourable The Earl of Crewe,

Lord President of the Privy Council.

My Lord,—I have the honour to inform you that on two occasions the Manchester Midwives Supervising Committee have suggested to the Central Midwives Board that amongst their revised rules should be one requiring that midwives shall at every visit subsequent to a confinement take the temperature of the lying-in woman and record it in a book, which shall be open to the inspection of the accredited officer of the Local Supervising Authority.

There is, it is true, a rule (Rule E 17 c. I. 5) to the effect that "if there is a rise of temperature above 100·4° F., with quickening of the pulse for more than 24 hours," the midwife must advise the patient that a medical practitioner should be sent for.

This rule by itself, however, does not appear to constitute an obligation on midwives to take and record temperatures.

Unless they do so, the utility of the Midwives Act, 1902, in respect of Puerperal Fever must, in my opinion, be largely nullified.

I understand that the Central Midwives Board have definitely resolved not to include such a requirement in their revised rules, and in face of the rule quoted above (Rule E 17 c. I. 5) it is difficult to see on what grounds this decision can be based.

I am given to understand that outside Manchester there are many midwives who are unable to take and record temperatures, as was the case up to recently in Manchester, but they can be taught to do so, and I am informed by the Executive Officer to the Manchester Midwives Supervising Committee that all the midwives in this area can now take and record temperatures.

It appears to me that any midwife who cannot be so taught is unfit to conduct labours and to take charge of lying-in women.

The requirement is really, I think, fundamental to the affording of that protection to lying-in women against Puerperal Fever which the rules framed under the Act are intended to secure, and I trust, therefore, that I may be excused for directing your attention to this matter.

I have the honour to be, my Lord,

Your obedient servant,

JAMES NIVEN,

*Medical Officer of Health.*

To this letter the following reply was given :—

Privy Council Office,

London, S.W.,

3rd June, 1907.

Sir,—Referring to your letter of the 24th April last, I am directed by the Lord President of the Council to state that the Central Midwives Board will take into consideration on the next revision of the rules framed under the Midwives Act, 1902, your suggestion that midwives should be required to take the temperature of a patient at every visit.

I am, Sir,

Your obedient servant,

A. W. FITZROY.

The Medical Officer of Health  
for the City of Manchester,  
Public Health Office,  
Town Hall, Manchester



No rule embodying the suggested requirement was inserted, but the following circular letter, which must be taken as admitting the need for such a regulation, was subsequently issued by the Board :—

CENTRAL MIDWIVES BOARD.

9th August, 1907.

Sir,

*Midwives Act, 1902.*

*Rules of the Central Midwives Board.*

I am directed to forward to you a copy of a resolution which has been passed by the Central Midwives Board dealing with the question of taking of temperatures by midwives, as to which representations have from time to time been made to the Board by Local Supervising Authorities.

The Board is aware that some of the Authorities have already taken the matter in hand, and I am to convey the thanks of the Board to those who have done so.

I am, Sir,

Your obedient servant,

G. W. DUNCAN,

*Secretary.*

The Town Clerk,  
Manchester.

[COPY RESOLUTION.]

“ Resolved,—That inasmuch as changes in the pulse and temperature are  
“ the earliest and surest indication of the onset of Puerperal Fever when the  
“ disease is still amenable to treatment, the Board do call the attention of  
“ Local Supervising Authorities to the importance of instructing and  
“ encouraging midwives practising within their areas in taking and recording  
“ regularly the pulse and temperature in every case under their care.”

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It is, however, desirable that a definite rule should be provided on this subject.

The revised rules came into force on May 1st, and were issued to their midwives by the Supervising Authority on June 11th, each departure from the previous rules being underlined in red ink, so that they could not be overlooked.

Attention is drawn to the great improvement shown in the work of midwives in respect of sepsis.

There is little need to emphasise the great assistance which has been rendered to practitioners by Dr. Gordon in the operative work which he has so ably carried on at Monsall Hospital.

JAMES NIVEN,

*Medical Officer of Health.*

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STATEMENT BY THE EXECUTIVE OFFICER, MARGARET MERRY SMITH,  
M.B., CH.B., D.P.H. EDIN.

*Statistics Relating to Midwives.*

The number of midwives who gave notice of their intention to practise in Manchester during 1907 was 153; of these 24 reside without the City.

The following table (A) gives particulars relating to midwives practising in Manchester, and sets forth their qualifications prior to entry on the Midwives' Roll. It will be seen that more than 65 per cent. are certificated midwives.

It also contains under the separate headings the number of labours attended by midwives, the cases of Puerperal Fever, with other details in relation to these, and the number of suspensions, with the reasons therefor.

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DETAILS OF THE WORK OF THE EXECUTIVE OFFICER.

*Inspection Visits to Midwives.*

279 inspection visits were paid to midwives. In 202 cases the midwife was at home.

The number of instances in which interviews were sought by midwives at the Town Hall was 95.

TABLE A.—PARTICULARS RELATING TO MIDWIVES PRACTISING IN MANCHESTER IN 1907.

Qualification of Midwife.	Bona-fides.	St. Mary's Hospital.	Maternity Hospital.	London Obstetric Society.	Queen Charlotte Hospital.	Liverpool Hospital.	Rotunda Hospital.	Central Midwives Board.	Total.	Column.
No. notifying their intention to practice in Manchester in 1907	45	26	17	33	1	3	1	3	129	1
Resident in Manchester { Resident outside Manchester {	13	7	...	1	...	...	...	3	24	2
	3	3	1	2	...	...	...	...	9	3
	...	...	...	...	...	...	...	...	...	4
	1	...	...	...	...	...	...	...	1	5
	3	...	...	...	...	...	...	...	4	6
	2	1	1	...	...	...	...	...	3	7
	3297	2600	1779	2680	23	250	13	486	11128	8
No. of cases of puerperal fever attended by midwives under the heading given	9	17	8	16	...	...	...	3	*53	9
Deaths amongst cases of puerperal fever attended by midwives	2	5	1	2	...	...	...	1	11	10
Per cent. of puerperal fever amongst all cases attended	0.27	0.65	0.45	0.60	...	...	...	0.62	0.48	11
Per cent. of puerperal fever amongst cases attended by midwives having puerperal fever in their practice	1.03	1.10	0.71	0.91	...	...	...	0.73	0.93	12
+ No. of suspensions	9	15	9	16	...	...	...	2	51	13
or with- drawal from practice on account of	2	...	1	1	...	...	...	...	4	13
	4	1	1	...	...	...	...	...	6	14

\* In addition to these were three cases attended by uncertified midwives.

+ Nine midwives were each suspended or withheld twice, and four three times.



The routine method of inspection outlined in the report for 1905 was again followed.

1.—Examination of the sanitary condition of the house :

In two instances defects were referred to the Sanitary Department and action was taken. One house was dirty. In each house there was either a fixed or sitz bath ; these were used regularly.

2.—Inspection of the bag of appliances :

The improvement in the equipment of the bags of appliances and in the standard of cleanliness of these noted during 1906 was maintained.

In 21 cases the conditions revealed on inspection were unsatisfactory. In nine cases the contents of the bag were unsatisfactory throughout, while in the other cases they were partially unsatisfactory. In two instances it was discovered that the well-equipped bag was kept at home ready for inspection, but was not taken to the labour.

3.—Examination of registers, medical aid record books, notification books, and temperature record books.

*Registers.*

Entries in registers were more complete, and were on the whole satisfactory. In 11 cases they were badly kept.

*Records of calling in Medical Aid.*

These were unsatisfactorily kept by seven midwives. It was chiefly where medical aid was called in for the pregnant woman and the new-born child that records were not sent in. There is, however, a very marked improvement in the notification of these records, as the figures in Table H show.

*Temperature Record Books.*

These have been on the whole well kept.

4.—Inspection of washing dresses and aprons :

The midwives possessed an adequate supply of such clothing, and except in one or two cases the clothing worn while in attendance on their patients was clean.

## INVESTIGATIONS OF THE MODE OF PRACTICE OF MIDWIVES.

The mode of practice of 70 midwives was investigated in the house of the patient throughout the year.

In all, 301 lying-in women were thus visited.

In 68 cases where the investigation was made as part of an ordinary inspection visit, the visits to lying-in women were paid with the midwife. In 63 cases the midwife was not present.

In 21 cases the visits were paid as the result of outside complaints received regarding the work done by some midwives. In five cases visits were paid by request of the midwives to view the condition of the house and bedding. In 53 cases the investigation was carried out because the patient developed Puerperal Fever. In 60 cases it was done because of the reasons given for calling in medical aid, in 5 cases because of still-births, and in 26 cases because of deaths of new-born children occurring in the practice of midwives.

UNCERTIFIED MIDWIVES.—Legal proceedings were taken against a midwife for having a door-plate exposed advertising herself as a midwife although not certified under the Midwives Act, 1902. She was fined 10s. and costs, 9s.

HANDY WOMEN.—11 visits were paid to them throughout the year. The visits were paid because these women had been in attendance on reported cases of Puerperal Fever. Similar measures of disinfection were carried out as in the case of midwives, and instructions were given as to the precautions to be taken when in attendance on lying-in women.

### PUERPERAL FEVER.

94 cases of Puerperal Fever were notified during 1907, and in addition to these one has been added, of which information was obtained from the death register. 87 cases occurred after confinement, and 8 cases after abortion. The total number of fatal cases, which includes the case from the death registers, was 20.

The day of onset of illness in 58 out of the total 95 cases was on or before the fourth day; in 89 cases it was on or before the eighth day. Of the fatal cases, two died within the first week after the confinement, 12 within the second; the remaining 6 died within one month.

Notifications of cases were sent in as follows:—51 cases within three days of the onset of the illness, and 81 within seven days. The midwife attended alone at the confinement in 35 cases of Puerperal Fever. In 18 of these the doctor was called in within 24 hours of the onset of the illness. In six cases he was called in on the second day, in nine on the third day, in one on the fourth day, and in one on the seventh day.

TABLE B.—GIVING IN DISTRICTS FOR 1907 THE POPULATION OF MANCHESTER ;  
BIRTHS AND BIRTH-RATES ; CASES, ETC., OF PUERPERAL FEVER ; AND THE  
NUMBER OF MIDWIVES RESIDENT IN EACH DISTRICT.

Statistical Divisions	Population	Births Registered		Cases of Puerperal Fever				1907 Midwives resident in Manchester.
		Number	Rate	Total Attacks	Deaths	Attack rate per 1,000 births	Case Fatality per cent.	
City of Manchester .....	643,158	18,251	28.38	95	20	5.20	21.1	129
I. Manchester Township .....	126,622	3,992	31.53	30	7	7.51	23.3	20
II. North Manchester .....	192,312	5,455	28.37	21	5	3.85	23.8	34
III. South Manchester .....	324,224	8,804	27.15	44	8	5.00	18.2	75
I. { Ancoats .....	43,261	1,476	34.12	8	4	5.42	50.0	6
Central.....	25,687	680	26.47	11	2	16.16	18.2	7
St. George's .....	57,674	1,836	31.83	11	1	5.99	9.1	7
II. { Cheetham .....	41,700	1,194	28.63	4	..	3.35	..	6
Crumpsall .....	9,369	190	20.28	2	1	10.56	50.0	1
Blackley .....	9,715	271	27.90	..	..	..	..	..
Harpurhey .....	22,131	511	23.09	1	1	1.96	100.0	5
Moston.....	19,334	495	25.60	1	1	2.02	100.0	4
Newton .....	38,851	1,132	29.14	5	1	4.42	20.0	8
Bradford .....	25,185	802	31.84	2	..	2.49	..	7
Beswick .....	12,487	473	37.88	4	..	8.45	..	1
Clayton .....	13,540	387	28.58	2	1	5.17	50.0	2
III. { Ardwick.....	44,797	1,326	29.60	3	..	2.26	..	7
Openshaw .....	28,824	977	33.90	9	1	9.23	11.1	8
West Gorton.....	31,926	879	27.53	4	1	4.55	25.0	5
Rusholme and Kirkmanshulme .....	26,684	831	31.14	5	2	6.02	40.0	10
Chorlton-upon-Medlock .....	55,988	1,245	22.24	7	..	5.63	..	14
Hulme .....	63,353	2,046	32.30	11	2	5.37	18.2	16
Moss Side .....	28,318	586	20.69	2	1	3.41	50.0	6
Withington .....	44,334	914	20.62	3	1	3.28	33.3	9



Section of Table B giving the number of Midwives resident outside but practising in Manchester.

Salford .....	10
Failsworth .....	1
Stretford .....	4
Gorton .....	3
Eccles .....	1
Levenshulme .....	4
Droylsden .....	1
<hr/>	
Total .. ..	24

TABLE C.—SHOWING THE NUMBER OF CASES OF PUERPERAL FEVER OCCURRING WEEK BY WEEK DURING 1907, ACCORDING TO DATE OF ONSET.

1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
Jan.	5	.....2	April	6	.....—	July	6	.....2	Oct.	5	.....1
	12	.....1		13	.....—		13	.....3		12	.....—
	19	.....2		20	.....4		20	.....3		19	.....3
	26	.....—		27	.....1		27	.....2		26	.....—
Feb.	2	.....1	May	4	.....3	Aug.	3	.....6	Nov.	2	.....2
	9	.....4		11	.....1		10	.....3		9	.....—
	16	.....3		18	.....3		17	.....—		16	.....2
	23	.....2		25	.....—		24	.....1		23	.....3
March	2	.....4	June	1	.....3		31	.....2		30	.....5
	9	.....3		8	.....2	Sept.	7	.....—	Dec.	7	.....1
	16	.....—		15	.....2		14	.....1		14	.....2
	23	.....—		22	.....3		21	.....2		21	.....—
	30	.....1		29	.....3		28	.....3		28	.....—
TOTAL .....			23			25			28		
									19		

TOTAL—95.

TABLE D.—RELATING TO THE CASES OF PUERPERAL FEVER ATTENDED EITHER BY MIDWIVES OR DOCTORS DURING THE YEARS 1905, 1906, and 1907.

Year	Number of cases attended by							
	MIDWIVES		DOCTORS		MIDWIFE AND DOCTOR		TOTAL	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
1905	41	11	31	11	10	3	82	25
1906	32	6	54	20	17	4	103	30
1907	35	4	39	9	21	7	95	20

TABLE E.—SHOWS WHERE PATIENTS SUFFERING FROM PUERPERAL FEVER WERE TREATED, AND THE RESULTS OBTAINED, IN 1907.

Cases treated at	Total No. of Cases	No. Recovering	No. of Deaths	Case Mortality per cent.
Monsall Hospital* .....	47	36	11	23·4
Home .....	36	29	7	19·4
Other Institutions .....	12	10	2	16·7
Total.....	95	75	20	21·1

\* The apparent discrepancy between these figures and those given on page 299 is owing to the fact that two cases were admitted into Monsall Hospital from districts outside Manchester.

TABLE F.—SHOWING FOR CASES OF PUERPERAL FEVER THE CHARACTER OF THE LABOUR AND THE RESULTS FOR 1907; ALSO THE CLASSIFICATION OF ABNORMAL CASES, AND CASES IN WHICH PERINEAL TEAR WAS STATED TO BE PRESENT.

	No. of Cases	Recovery	Death
Normal full term labour .....	51	42	9
Abnormal full term labour.....	36	26	10
Abortion .....	8	7	1
<i>Abnormal Labour.</i>			
Forceps .....	22	14	8
Adherent placenta manual removal .....	8	7	1
Placenta prævia .....	2	1	1
Retained placenta (not removed) .....	..	..	..
Ante and post partum hæmorrhage .....	3	3	..
Induced labour.....	1	1	..
Precipitate labour .....	..	..	..
<i>Perineal tear stated to be present.</i>			
Labour normal .....	6	3	3
Abnormal .....	9	6	3

# RECORDS OF CALLING-IN MEDICAL AID UNDER RULE E 19 OF THE CENTRAL MIDWIVES' BOARD, AND PAYMENT OF FEES IN CONNECTION THEREWITH.

During the year 1907, the number of medical records received was 1,514, as compared with 1,255 in the previous year. 1,146 of the records were for cases occurring in the private practice of midwives, whilst 368 were in connection with the various lying-in charities. The corresponding figures for 1906 were 951 and 304 respectively. Based on the total number of cases attended, this is equal to an increase of 1·7 per cent. The increase was largely in the "labour" group of emergencies requiring medical aid. From these facts it would appear that the midwives are realising the importance of the above-mentioned Rule.

Enquiries were made into 53 cases where the medical practitioners had been called in because of rise of temperature, quickened pulse rate, rigor, foul smelling discharge or other symptoms of Puerperal Fever. Also in some cases where inflammation of the child's eyes was reported. In six cases the mother was subsequently notified as suffering from Puerperal Fever.

The records are classified in the following table under the various causes for which medical aid was sought. (See Table H on next page.)

As regards the payment of fees to medical practitioners, under the scheme outlined in the report for 1905, 288 applications were received during the year. These were considered by the Medical Sub-Committee and they recommended that payment should be made in 239 cases, amounting to £247 10s. Of the 49 cases which were rejected as not fulfilling the conditions, in 26 instances the income was above the scale, whilst 19 were not cases of emergency for which the fee is paid. Three duplicate applications were received, and a Board of Guardians paid one fee.

## STILL-BIRTHS.

The total number of still-births during 1907, of which there is any return, was 818, as compared with 789 in the previous year.



BLE H.—NUMBER OF CASES OCCURRING IN 1907 IN WHICH THE MIDWIFE ADVISED THAT A REGISTERED MEDICAL PRACTITIONER SHOULD BE SENT FOR (RULE E 18). ALSO THE NUMBER OF APPLICATIONS FROM MEDICAL PRACTITIONERS FOR PAYMENT OF THEIR FEES FOR ATTENDING CERTAIN EMERGENCY CASES.

Medical aid called in on account of the following causes, as stated by the Midwife		Total	Private Cases	Hospital outdoor cases	Application for + Fees		
{	Abortions, miscarriages.....	24	21	3	5		
	Deformed pelvis .....	..	..	..	..		
	Loss of blood .....	4	3	1	1		
	Other unusual features of pregnancy .....	19	12	7	2		
{	Presentations	Head {	Occipito posterior	12	10	2	21
			Brow .....	3	1	2	5
		Face .....	26	21	5	10	
			Abnormal .....	..	..	..	1
			Breech {	In primiparæ ....	14	13	1
		In multiparæ .. .		2	2	..	..
		Para not stated ..		38	30	8	11
		Knee .....	..	..	..	..	
		Foot .....	12	9	3	2	
		Hand or arm .....	13	11	2	2	
		Transverse .....	12	8	4	6	
		Funis .....	29	23	6	14	
		Placenta Prævia .....	24	20	4	12	
		Unable to make out .....	6	6	..	..	
		Tedious labour {	Forceps used .....	22	21	1	77
			No record as to forceps..	318	270	48	6
Placenta {	Retained .....	46	34	12	17		
	Adherent .....	24	20	4	13		
Membranes retained .....		50	20	30	9		
Rupture of perineum .....		171	124	47	27		
Hæmorrhage {	Ante partum or accid. ..	52	44	8	23		
	Post partum .....	19	13	6	..		
Convulsions.....		18	11	7	2		
Complications .....		22	12	10	..		
Others ..		5	5	..	..		
Premature labour .....		20	14	6	..		
{	Abdominal swellings .....	..	..	..	..		
	Foul-smelling discharges.....	2	1	1	..		
	Post partum hæmorrhage .....	3	2	1	4		
	Rigor .....	6	5	1	..		
	Rise of temperature above 100·4° F. ....	62	31	31	7		
	Unusual swelling of breasts .....	13	11	2	..		
	Progress unsatisfactory or complications ..	60	35	25	3		
{	Injuries received during birth .....	1	..	1	1		
	Obvious malformations .....	24	18	6	..		
	Concealed malformations .....	1	1	..	..		
	Inflammation of eyes, eyelids, and ears.....	43	32	11	..		
	Syphilitic appearance of skin .....	..	..	..	..		
	Illness from prematurity .....	117	89	28	2		
	Malignant jaundice .....	15	14	1	..		
	Inflammation about the umbilicus.....	2	2	..	1		
	Unspecified or complications .....	160	127	33	..		
TOTALS .....		1,514	1,146	368	288		

\* In addition to the 77 cases of tedious labour in which forceps were used, instrumental aid was also required in 50 of the other cases of labour.

These applications have been classified according to the conditions requiring treatment found by the medical practitioner.

This number includes 500 still-births which occurred in the practice of doctors, and 318 which occurred in the practice of midwives. The numbers for 1906 were 449 and 340 respectively.

Through the courtesy of the Parks and Cemeteries Committee, and of Registrars of several Cemeteries in Manchester not under their management, the Midwives' Supervising Committee receives a list of all still-births registered for burial. Midwives are required by law to notify all still-births occurring in their practice within 24 hours.

A fairly complete return is therefore available.

Through the cemeteries' return, 701 still-births were notified; 500 of these were doctors' cases, and 201 midwives' cases. 117 still-births attended by midwives were notified by them alone in addition to the 201 cases returned by the cemeteries, and also notified by them. This shows that the cemeteries' return is not a complete one, and that burials must take place in cemeteries or elsewhere for which there is no return. The midwives have been requested, when notifying a still-birth, to state, if possible, the place of burial. This was given in 267 instances, leaving 51 unaccounted for.

The still-births have been classified in districts; those occurring in the practice of doctors and midwives are shown in separate columns.

This classification shows the percentage of live and still-born children, and the still-birth-rate. The still-birth-rate is calculated on the returns from midwives, as these returns are very complete.

It will be seen that the percentage of still-born children is in Manchester 3·7, and the still-birth-rate 0·49 per 1,000 of the population in midwives' practice.

The districts in which the still-birth-rate is highest are Hulme, Ancoats, Bradford, Newton, and Chorlton-upon-Medlock. These are given in order, beginning with the district in which the still-birth-rate is highest. (See Table I on next page.)

TABLE I.--TOTAL NUMBER OF BIRTHS REGISTERED IN 1907; ALSO THE NUMBER OF STILL-BIRTHS OCCURRING IN THE PRACTICE OF MEDICAL PRACTITIONERS AND MIDWIVES, AS OBTAINED FROM THE RETURNS OF BURIALS AT VARIOUS CEMETERIES.

Statistical Divisions	Births Registered	Still-births Classified from Cemetery Returns		Proportion Per Cent.			Total Still-births notified by Midwives	Still-birth rate per 1,000 of the Population
				Born Living	Doctors' Cases	Midwives' Cases		
City of Manchester .....	18,251	500	201	96·3	2·6	1·1	318	0·49
I. Manchester Township .....	3,992	114	61	95·8	2·7	1·5	78	0·62
II. North Manchester .....	5,455	160	39	96·5	2·8	0·7	87	0·45
III. South Manchester .....	8,804	226	101	96·5	2·4	1·1	153	0·47
I. { Ancoats .....	1,476	40	23	96·0	2·6	1·4	35	0·81
	680	22	8	95·8	3·1	1·1	12	0·47
	1,836	52	30	95·7	2·7	1·6	31	0·54
II. { Cheetham .....	1,194	34	4	96·9	2·8	0·3	18	0·43
	190	8	..	95·9	4·1	..	..	..
	271	5	..	98·2	1·8	..	1	0·10
	511	20	6	95·2	3·7	1·1	11	0·50
	495	10	..	98·0	2·0	..	6	0·31
	1,132	28	9	96·8	2·4	0·8	24	0·62
	802	35	15	94·1	4·1	1·8	16	0·64
	473	16	4	96·0	3·2	0·8	7	0·56
	387	4	1	98·7	1·0	0·3	4	0·30
III. { Ardwick.....	1,326	41	15	95·9	3·0	1·1	14	0·31
	977	19	8	97·3	1·9	0·8	9	0·31
	879	12	6	98·0	1·3	0·7	18	0·56
	831	14	4	97·9	1·6	0·5	11	0·41
	1,245	37	21	95·6	2·8	1·6	34	0·61
	2,046	54	38	95·7	2·5	1·8	56	0·88
	586	24	3	95·6	3·9	0·5	4	0·14
	914	25	6	96·8	2·6	0·6	7	0·16



## MIDWIVES REPORTED TO THE CENTRAL MIDWIVES' BOARD ON CHARGES OF MALPRACTICE, NEGLIGENCE, OR MISCONDUCT.

During the year the Midwives' Supervising Committee, in considering the various reports submitted to them, decided that *prima facie* cases of negligence or misconduct had been established against three midwives, and reports respecting these were forwarded to the Central Midwives' Board. Subsequently the names of these women were struck off the Midwives' Roll.

The following are the charges on which such action was based:—

1.—Midwife A (*bona fide*) was suspended in connection with a case of Puerperal Fever, in which she failed to take antiseptic precautions, and did not advise that medical aid should be called in on the occurrence of foul smelling discharges. It was decided to continue the suspension to enable her to learn the rules of the Central Midwives' Board. Whilst under suspension, she attended three cases, but did not enter them in her register and did not decline to attend alone in a case of ante partum hæmorrhage. The midwife appeared before the Midwives' Supervising Committee, on March 21st, and at first strongly denied having attended any cases whilst under suspension, subsequently she admitted it when it was proposed to accompany her to the cases.

2.—Midwife B (*bona fide*) was suspended on April 25th, for failing to take cleansing and antiseptic precautions, failure to take and record temperatures, not advising that medical aid should be called in on the occurrence of foul smelling discharges, using an enema syringe for douching the patient, and using as a lubricant, while making internal examination, one which was not antiseptic. Puerperal Fever ensued. She also failed to keep her registers entered up accurately.

3.—Midwife C (*bona fide*) was suspended on December 4th, for failing to take with her to confinements her appliances and antiseptics. These were found in a dirty condition and had been thus used. She attended cases of labour whilst not wearing a dress of washable material. The temperature and pulse were not taken in two specific instances, and her register and records were incomplete.

In addition to the removal of these names from the Midwives' Roll, a fourth name was removed at the midwife's own request.

### DEATH OF MOTHER OR NEW-BORN CHILD.

No notifications were received of the death of a mother before the attendance of a medical practitioner could be obtained.

Notifications of 32 deaths of new-born children have been received, and of these 26 were investigated.

Enquiries were made by the City Coroner into the causes of these deaths. In 21 instances inquests were held and 11 were returned as uncertified.

The causes of death were given as follows:—

	Inquest cases.			Uncertified deaths.
Accidental suffocation .. ..	9			1
Congenital defects .. ..	6			1
Convulsions .. ..	1			1
Defective vitality .. ..	0			2
Premature birth .. ..	1			6
Want of attention at birth .. ..	4			0
	—			—
	*21			11
	—			—

\* Post-mortem examinations were made in 16 cases.

The districts in which these deaths occurred were—Hulme 6, St. George's 5, Ancoats 4, West Gorton 3, Ardwick, Openshaw and Chorlton-upon-Medlock 2 each, and 1 each in Central, Cheetham, Blackley, Harpurhey, Newton, Bradford, Beswick and Moss Side.

## GENERAL REMARKS.

The improvement noted in all departments of the work during 1906 has continued. The addresses and demonstrations on the requirements of the rules which were given weekly during the first six months of the year, were well attended. The average attendance was 15, and the total attendance of midwives was 364.

Evidently the instruction thus given was of practical use, as there have been repeated requests for a further set of demonstrations, which are now being given. The syllabus is given in the report for 1906.

11,128 women in labour were attended by midwives during 1907, a return practically the same as that for 1906. It is well to bear in mind when discussing questions relating to the health of mothers and young children, that midwives attend more than half the labours in Manchester, and that it is of the utmost importance their work should be well done, and that no effort should be spared to increase their efficiency.

Undoubtedly the influence of the midwives in the prevention of infantile mortality is very great, and it is gratifying to find what a hearty response was made when a voluntary system of notification of live-births by them was asked for in December.

These returns are sent in weekly on stamped forms, which are sealed. No fee is given for such notifications. As soon as possible after the tenth day the Health Visitor for the district visits the child, and continues to keep it under observation for a year. In many cases the midwives also keep a watchful eye over the children whom they have attended at birth. The interest thus taken by them is beneficial, and is especially useful in those districts where there are no Health Visitors.

Hearty co-operation between midwives and Health Visitors is desirable in order to bring about continuity of work and good results. Instructions have been given to Health Visitors not to visit until the midwife has ceased, and as far as possible to see that the instructions given by her are carried out. If a midwife is doing good work she has nothing to fear when a Health Visitor sees her patient; on the contrary, she has much to gain when she realises that a watchful eye will be kept over both the mother and child for some time.

The number of midwives residing in Manchester who notified their intention to practise during 1907 is smaller than last year. It is accounted for chiefly by removal from Manchester, but it is to be regretted that the conduct and work of three midwives were such that they were struck off the Roll. One of these still attends a large number of lying-in cases, and as it is a district where there is no Health Visitor there is little control over her work.



In one or two of the districts there has been a temporary shortage of midwives, due to suspensions being enforced, and it is probable that within the next year or so the problem of supply and demand of midwives in different areas may require serious consideration. It is difficult to decide what is to be done in such circumstances. The people themselves, in many instances, prefer to employ the midwife who is easy going both as regards payment and cleanliness, and refuse to employ the more competent and more highly trained woman who insists on the provision of clean garments, and requires the recognised fee for her attendance.

In one district where the services of a well-trained midwife were necessary for the well-being of the community, such an one was literally starved out after residing there two years. It was true that after 1910 she probably would have been able to earn a livelihood, but she had no further reserve of money to draw upon.

Education of the people themselves is necessary to enable them to appreciate the benefits of skilled attendance. At present they do realise the fact that it requires effort on their part to save the extra shillings, and to maintain in their person, clothing, and house that standard of cleanliness which the more skilled woman demands. They prefer the greater present ease of body and of mind to this effort.

In one case, a young primipara who had required medical attendance to be called in by the midwife at the labour no payment was made to the midwife for some months. The midwife had requested the woman during the final visit to pay the doctor, and to keep the child and herself clean. The midwife had attended during the whole of the labour, and had visited daily during the lying-in period. The young woman had 6/- under her pillow during that last visit which she intended to give to the midwife as part payment; she did not do so, remarking she had no money. She informed a neighbour that she wasn't going to pay the midwife a penny, because she had been told by her to be clean. The advice was very necessary. The midwife was urgently in need of the money.

The money now required for training exhausts the supply of savings which most of the women, who have taken up midwifery, possess. They have no reserve fund to draw on for the waiting period, and unless they are married or are financed by charity, or loan, it is impossible in most cases for them to settle as midwives in a district.

I wish, in conclusion, to thank Mr. Dunks for his valuable help in the clerical work throughout the year.



*Extract from a Report by Dr. A. Knyvett Gordon, Medical Superintendent of the Monsall Fever Hospital, in reference to the treatment of cases of Puerperal Fever in Hospital during 1907.*

### PUERPERAL FEVER.

In connection with this subject I give, as before, a table showing the salient features of each case discharged during 1907; this is practically the same form as that appended to last year's report.

In commenting on the cases I shall confine myself to the clinical features only, as any questions concerning the origin of the cases can be studied with greater advantage in the report of the Executive Officer to the Midwives Supervising Committee, which deals with all cases, and not merely with those admitted to Hospital.

I would point out that these 49 cases are most useful when taken in conjunction, and not in comparison, with those of last year. In such a complex disease as Puerperal Sepsis it is impossible to draw any useful conclusion from statistics only, as it is not easy to eliminate obvious fallacies. The figures for last year are given in brackets.

(1) *Results*.—The total number of cases (49) is the same as last year. The gross mortality is also the same, viz., 12 cases, or 24·4 per cent.

As regards the condition of the patients on admission, six, or 12·2 per cent., appeared to be obviously dying, but two of these reacted in quite an unexpected manner to treatment, and ultimately recovered.

In 11, or 22 per cent., the state of health could be described as fair, but 34, or 69 per cent., patients were obviously very ill indeed. The statement previously made that at Monsall we do not, as a rule, see the mild cases therefore still holds good.

There is still far too great a tendency in the case of Puerperal Sepsis to regard the isolation hospital as merely a receptive institution, and as existing not so much for the convenience of the patient as of her environment.

The average interval elapsing between the calling in of the doctor by the midwife, or (in cases where he was in attendance at the confinement) from the onset of the first symptoms to the admission of the cases, was four and a half days ( $4\frac{1}{2}$ ). In this connection, case No. 26 is omitted, as a clinical, and not merely an arithmetical, average is required. This interval is, in my opinion, far too long. Whatever treatment may be considered advisable for cases of Puerperal Sepsis, there can be no doubt that the earlier it is applied the better; but

from the history of the cases it does not appear that any treatment worthy of the name was, as a rule, given before admission, the interval having been spent for the most part in the administration of vaginal douches and of small doses of quinine internally.

Of the cases discharged cured, the average duration of the stay in Hospital was 41 days (60). In every case the patient was detained until she was fit for domestic exertion. The average in the case of those who did not recover was eight days only.

(2) *The cause of the illness.*—The cases in which a medical man was present at the confinement number 28 (28), or 57 per cent. ; a midwife attended alone in 15 (16), or 30 per cent. ; five patients were not attended by either, and one by both. It is necessary, however, to observe that in the “doctors’” cases it is probable that a female attendant of some sort was also present, and it does not seem to me to be possible to entirely exclude her as a source of infection. As I pointed out last year, it is unlikely that the incubation period of Puerperal Sepsis in the large majority of cases is over 48 hours, so that when the time elapsing between delivery and the onset of the symptoms is greater than this, it is very doubtful whether the medical man can rightly consider himself or be considered responsible for the occurrence of sepsis.

In the “doctors’” cases this year this latent period was—

In 5 cases during the first 24 hours ;  
 In 8 „ between 24 and 48 hours ;  
 In 2 „ between 48 and 72 hours ;  
 In 8 „ between 72 and 96 hours ;  
 In 0 „ between 96 and 120 hours ;  
 In 5 „ over 5 days.

It is, therefore, very doubtful whether the medical attendant was really responsible for 15 out of the 28 cases, or nearly 50 per cent. of those for which he has probably been blamed.

In practice, the occasions on which the medical attendant finds it necessary to make an internal examination during this latent period must be very few, while the opportunities which an unskilled female attendant, over whom nobody whatever has or can have any possibility or power of supervision, may have of causing infection are very numerous.

The responsibility, however, of the medical attendant is rather more clear in cases where forceps were employed at the time of delivery, which this year were eight in number. This procedure was followed by extensive laceration of the cervix and vagina in six instances, in five of which the onset of the pyrexia



# CASES OF PUERPERAL FEVER DISCHARGED DURING 1907.

BEFORE ADMISSION					AFTER ADMISSION										
No.	Initials	Day of onset of Fever	Day of disease on admission	Days elapsing between calling in of Doctor and Admission to Hospital	Doctor or Midwife	Forceps	Curetting	Serum	Bacteriology	Condition on Admission	Progress, Remarks, and Complications	Other Operations	Days in Hospital	Result	
1	E.M.	4	3	3	Dr.	No	Yes	No	Streptococci Blood Sterile	Very bad	Slow but complete recovery; general Peritonitis from ruptured uterine abscess	Laparotomy; plastic operation on uterine wall drainage	101	Cured	
2	M.R.	2	2	2	Dr.	7 times	No	Yes	Streptococci	Very bad	Extensive laceration; slow, but complete recovery; Pelvic cellulitis	None	53	Cured	
3	M.O.	2	2	2	Dr.		Yes	Yes	Streptococci, Bacillus Coli Communis	Apparently moribund		Complete recovery; extreme laceration of parts on admission, followed by Pelvic cellulitis	None	62	Cured
4	M.F.	7	6	4	M.	No	Yes	No	Streptococci	Very bad	Died of Pyæmia 3 weeks later; Septic thrombosis	Ligature of left femoral vein	20	Died	
5	M.M.	2	2	2	M.	No	Yes	No	Streptococci	Fair	Uneventful recovery	Laparotomy	27	Cured	
6	E.B.	2	2	4	Dr.	No	Yes	No	Bacillus Coli Communis	Fair		Uneventful recovery	None	35	Cured
7	J.O.	2	2	1	M.	No	Yes	No	No growth	Good	Rapid recovery	None	30	Cured	
8	E.T.	2	4	6	Dr.	No	Yes	No	Streptococci	Very bad	Uterine contents gangrenous; Puerperal mania (Patient transferred to Asylum)	None	15	Cured	
9	M.C.	4	3	6	Dr.	Yes	Yes	Yes	Streptococci, Bacillus Coli Communis	Very bad	Septic Endocarditis; Pelvic peritonitis; Abscess in uterine wall	Laparotomy	15	Died	
10	R.W.	4	5	8	Dr.	No	Yes	No	Streptococci	Fair	Uneventful recovery	None	38	Cured	
11	A.J.	4	3	3	M.	No	Yes	Yes	Streptococci	Apparently moribund	Curetted before admission with blunt curette; Early general peritonitis found post mortem	None	3	Died	
12	S.L.	4	1	3	Dr.	Yes	Yes	No	Streptococci	Very bad	No improvement; intense parametritis	Laparotomy (permission for Laparotomy refused)	8	Died	
13	M.B.	6	5	4	M.	No	Yes	No	Streptococci	Intense Sæpæmia	Rapid recovery	None	32	Cured	
14	M.L.	2	5	5	Dr.	Yes	Yes	No	Streptococci	Very bad	Extensive laceration of Vagina into peritoneal cavity, Pelvic peritonitis	None	41	Cured	
15	L.L.	7	11	5	M.	No	Yes	No	No growth	Fair	A case of "Sæpæmia." Developed puerperal mania	None	16	Cured	
16	B.K.	4	5	10	Dr.	No	Yes	No	Streptococci in blood and in uterus	Very bad		Slow and complete recovery	None	48	Cured
17	S.D.	5	3	1	Neither	No	Yes	No	Streptococci, Blood Sterile	Bad	Rapid recovery; retained placenta	None	34	Cured	
18	F.C.	4	4	6	Dr.	No	Yes	No	Streptococci, Blood Sterile	Very bad	No improvement; uterus gangrenous	Hysterectomy	12	Died	
19	H.M.	9	1	9	Dr.	Yes	Yes	No	Streptococci	Bad	Retained placenta; rapid recovery	None	21	Cured	
20	M.H.	1	3	1	M.	No	Yes	No	No growth	Fair	Uneventful recovery	None	33	Cured	
21	M.D.	8	2	Dr. called same day	Neither	No	No	No	Streptococci	Moribund	A case of abortion induced by drugs; inquest held; Patient moribund from Pneumonia on admission	None	5	Died	
22	S.C.	3	12		15	Dr.	No	No	No	Streptococci	Very bad	Death from Double Pneumonia	None	11	Died
23	L.N.	1	4	1	M.	No	Yes	No	Diplococci	Very bad	Convalescence retarded by tubo ovarian abscess, and sinus, resulting from operation	Laparotomy	111	Cured	
24	M.C.	4	7	9	Dr.	No	Yes	No	Streptococci	Very bad	Dying from Pneumonia on admission	None	3	Died	
25	M.E.	4	5	9	Dr.	No	Yes	No	Streptococci	Bad	Intense Parametritis on admission	None	31	Cured	
26	E.A.	6	3	40 wks.	Dr.	Yes	No	No	No growth	Fair	A late case, admitted with femoral thrombosis	None	28	Cured	
27	M.W.	7	2	1	M.	No	Yes	Yes	No growth	Bad	Admitted in a maniacal condition	None	27	Cured	
28	M.S.	1	3	3	M.	No	Yes	No	No growth	Bad	Retained placenta	None	10	Cured	
29	A.R.	5	2	21	Neither	No	Yes	No	Streptococci	Very bad	Intense general septicæmia; local lesion slight	None	57	Cured	
30	M.C.	?	?	Dr. called same day	Neither	No	Yes	No	Streptococci	Apparently moribund	A case of missed abortion becoming septic; general Peritonitis on admission	Laparotomy	53	Cured	
31	R.S.	2	2		4	Dr.	Yes	Yes	No	Bacillus Coli Communis	Very bad	Extensive laceration; Pelvic peritonitis; repeated rigors; subsequent complete recovery	None	59	Cured
32	H.W.	1	3	4	Dr.	No	Yes	No	Streptococci	Fair	Convalescence retarded by Pelvic cellulitis	None	60	Cured	
33	D.P.	1	2	3	Neither	No	Yes	No	Bacillus Coli Communis	Very bad	Masses of sloughing placenta removed	None	44	Cured	
34	R.H.	9	7	9	Dr.	No	Yes	No	Streptococci	Fair	Rapid recovery	None	27	Cured	
35	J.W.	1	4	3	Dr.	Yes	Yes	No	Bacillus Coli Communis, Blood Sterile	Very bad	Extensive laceration	None	42	Cured	
36	J.S.	3	5	7	Dr.	Yes	Yes	No	Streptococci Blood Sterile	Bad	Extensive laceration; recovery rapid	None	33	Cured	
37	L.B.	2	3	3	Both	Yes	Yes	No	Streptococci Yeast	Bad	Retained placenta; recovery slow	None	42	Cured	
38	M.L.	2	7	7	Dr.	Yes	Yes	Yes	Streptococci	Very bad	Uterus gangrenous; extensive laceration	None	7	Died	
39	H.M.	1	13	13	Dr.	Yes	Yes	No	No growth	Very bad	Persistent Pyrexia; much Pelvic inflammation	Laparotomy	39	Cured	
40	A.B.	4	4	3	M.	No	Yes	No	Staphylococci and Streptococci	Bad	Rapid recovery after curetting	None	32	Cured	
41	E.S.	1	4	4	Dr.	No	Yes	No	Streptococci	Bad	Rapid recovery after curetting	None	34	Cured	
42	M.L.	2	3	2	Dr.	No	Yes	No	Bacillus Coli Communis	Very bad	Retention of almost entire placenta	None	30	Cured	
43	C.H.	4	6	5	M.	No	Yes	No	Streptococci and Staphylococci	Fair	Pelvic cellulitis present on admission	None	42	Cured	
44	E.B.	1	4	2	Dr.	No	Yes	No	Bacillus Coli Communis	Fair	Rapid recovery after curetting	None	23	Cured	
45	E.T.	17	2	7	Dr.	No	Yes	No	Diplococci	Very bad	Septic abortion followed by venous thrombosis	None	60	Cured	
46	M.H.	4	3	Dr. called in on the same day	M.	No	Yes	No	Streptococci, Bacillus Coli Communis	Moribund	General Peritonitis; permission for Laparotomy refused	None	2	Died	
47	M.D.	10	2		6	Dr.	No	Yes	No	Blood Sterile	Very bad	Death from general Septicæmia; no gross lesion	None	5	Died
48	M.B.	3	3		2	M.	No	Yes	No	Streptococci	Moribund	General Peritonitis on admission	None	4	Died
49	A.H.	4	3		1	M.	No	Yes	Yes	Streptococci	Very bad	Rapid recovery after curetting	None	47	Cured
									Streptococci in blood						





occurred within 48 hours, and in one within 60 hours, of the instrumental interference ; in one instance the lacerations extended to and had opened up the general peritoneal cavity.

In the "midwives' " cases, the average day of onset of the symptoms was the fourth. Taking this with the results of the analyses of the "doctors' " cases given above, it is apparent that in the bulk of the cases admitted to Monsall—and we may take it that these are, as a rule, more severe than those left at home—infection was not determined by anything that had taken place at delivery. I believe this to be true of Puerperal Fever generally, and while I would not for one moment minimise the importance of asepsis during labour itself, I am certainly of opinion that insufficient attention is, as a rule, given by the medical profession and teachers of midwifery to the necessity for the preservation of this asepsis subsequently by the female attendant, whoever she may be.

(3) *The Bacteriology of the cases.*—Cultures taken with due precautions from the interior of the uterus showed the presence of streptococci only in 27 (29) instances, and combined with other organisms in five (5) more, making together 65 per cent. of all the cases. *Bacillus coli communis* was present also in five cases, and mixed with other organisms in four cases, equal to 18 per cent. Streptococci were present in the circulating blood also in three instances, in all of which, incidentally, recovery took place. In seven (15) there was no growth on the culture media. Owing to the fact that intrauterine treatment had meanwhile been adopted, it was not possible to repeat the bacteriological examination in these cases. It is not, I think, possible to formulate any relation between the bacteriological findings and the clinical features of the cases; the numbers are too few.

(4) *The Nature of the Lesion.*—There were six (18) cases in which large portions of the placenta were found to have been retained in the uterus ; all recovered. As previously mentioned, six (7) cases showed extensive laceration following the use of forceps, five of which recovered. General peritonitis was present on admission in five (8) cases, in two of which laparotomy was performed, with subsequent recovery. Permission for laparotomy was refused in two instances, and in one the patient did not appear to be in a condition to undergo any operation ; all these died. There can, I think, be no doubt that the performance of laparotomy offers the only chance of recovery from general purulent peritonitis of puerperal origin.

Pelvic inflammation (cellulitis or peritonitis, or both) was present on admission in nine (3) cases, with seven recoveries, and developed during convalescence in

two cases, both of which recovered. Intense general septicæmia without any discoverable gross lesion other than endometritis occurred in two cases (13); one recovered.

(5) *The treatment adopted.*—In all but four (8) cases the uterus was curetted on admission with a large sharp instrument, this procedure being followed by a thorough rubbing of the resulting raw surface with undiluted Izal fluid; the uterus and vagina were then packed with 10 per cent. Izal gauze. Neither intrauterine nor vaginal douching has been employed at Monsall for some 18 months. The mortality of the curetted cases was 22 per cent. I should add that for curetting it has not been my custom for the last 18 months to employ a general anæsthetic, but simply to abolish pain and sensibility by giving alcohol by mouth, followed by morphia hypodermically; this suggestion, which is undoubtedly a very valuable one, I owe to the courtesy of Professor Sir William Sinclair.

As previously mentioned, curetting was adopted at Monsall only after a fair trial of the policy of “non-interference.” Out of 79 cases treated only by general methods (including serum with or without intrauterine douches), 37 died, a mortality of 46 per cent. The curetted cases have, on the other hand, shown a mortality which has remained steady at or about 24 per cent. It does not therefore seem possible to accept the statement which some would have us believe, that the use of the curette is in itself to be condemned, unless that be taken to refer to curetting alone (*i.e.*, not followed by swabbing with a powerful germicide), which is undoubtedly most harmful.

I have removed the uterus (as a last resort only) in one case this year, but without success; the condition of the organ was such that recovery seemed to be otherwise impossible. Laparotomy, with or without removal of the diseased appendages, was resorted to in seven (14) cases, with four (10) recoveries. It must here be remembered that this operation was performed during the pyrexial period and for the treatment of the lesion from which septic absorption was taking place, and on the indication that the operation was in each case clearly and urgently required. The results are, therefore, in nowise comparable with those of laparotomy for the late results of Puerperal Sepsis when the time for the operation could be deliberately chosen. In the pyrexial period the patient's resistance is usually at its lowest. I may, perhaps, add that these results have been fairly constant, for out of 40 cases in which I have been compelled to open the abdomen in the acute stage the recovery rate has been 60 per cent.

Antistreptococcic serum of the polyvalent variety has been given in seven (20) cases only, in six of which streptococci were present in the uterus. The dose was 100 cubic centimetres, and was usually given in a large quantity of saline



solution hypodermically. With increasing experience of the value and limitations of local disinfection of the uterus, antistreptococcic serum has not been used as freely as heretofore, my impression being that it is only useful in cases where the local lesion is but slight while the septicæmia is intense. It seems to be pretty clear that doses under 100 c.c. are of comparatively little value, and also that the injection should not be repeated.

As regards general measures, I am certainly inclined to think that the administration of large quantities of normal saline solution (preferably by hypodermic injection) is of great value in the treatment of septicæmia generally, and of streptococcal infection in particular. Much fluid is also given by mouth. As close an approximation as possible to open-air treatment is obtained by having the ward windows kept very freely open, even when the outside temperature is low.

I would certainly prefer to treat these cases entirely on the open air plan, but this is not possible at Monsall.

There can be no doubt that much of the success, where it has been obtained, is due to the perseverance and attention to detail on the part of the nursing staff. Intelligent and painstaking nursing is often more necessary in Puerperal than in Enteric Fever; at times the pressure on the nursing staff has been very great.

It is greatly to be wished that some form of "after-care" of the patients could be obtained when they leave Hospital. Most of our patients have then to choose between domestic labour and the breaking-up of the home, and one cannot detain them always as long as one would wish. What is wanted is to secure the services of someone who would do the rough work for them, if only for a fortnight after their discharge. A Convalescent Home is useless in cases of Puerperal Fever, as the mothers are already sufficiently anxious about the condition of their home and remaining children, and return to their domestic surroundings is often imperative. Though there have been marked exceptions, I cannot but feel that the attitude of the average husband in these cases is a markedly selfish one; too frequently has the absence of the housewife resulted in an outburst of various forms of intemperance on his part, with consequent neglect of the welfare of the children.

I would add that in the majority of cases the newly-born infant has been admitted with the mother, and that this course has always been urged on the relatives. Not only is the mother's anxiety allayed thereby, but the proper feeding of the baby has been made possible. When the mother is convalescent,

she receives practical instruction in the feeding and clothing of the child, which is probably of value to any children she may have subsequently, and possibly also to those of her neighbours.

All patients who have suffered from Puerperal Fever are encouraged to report themselves at monthly intervals at the Hospital with their infants, and details of their progress after they have returned to domestic or other work have thus been obtained. Amongst other points, it is evident that the active disinfection of the uterus in the manner described has not interfered with subsequent pregnancy, and it is also manifest that the cure has usually been permanent, it having been quite an exception for the patient to become a regular visitor at another hospital on her discharge from Monsall. Only a very few cases have been lost sight of altogether.

On behalf of the Committee,

A. W. CHAPMAN,

*Chairman.*

Town Hall, Manchester,  
22nd July, 1908.

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